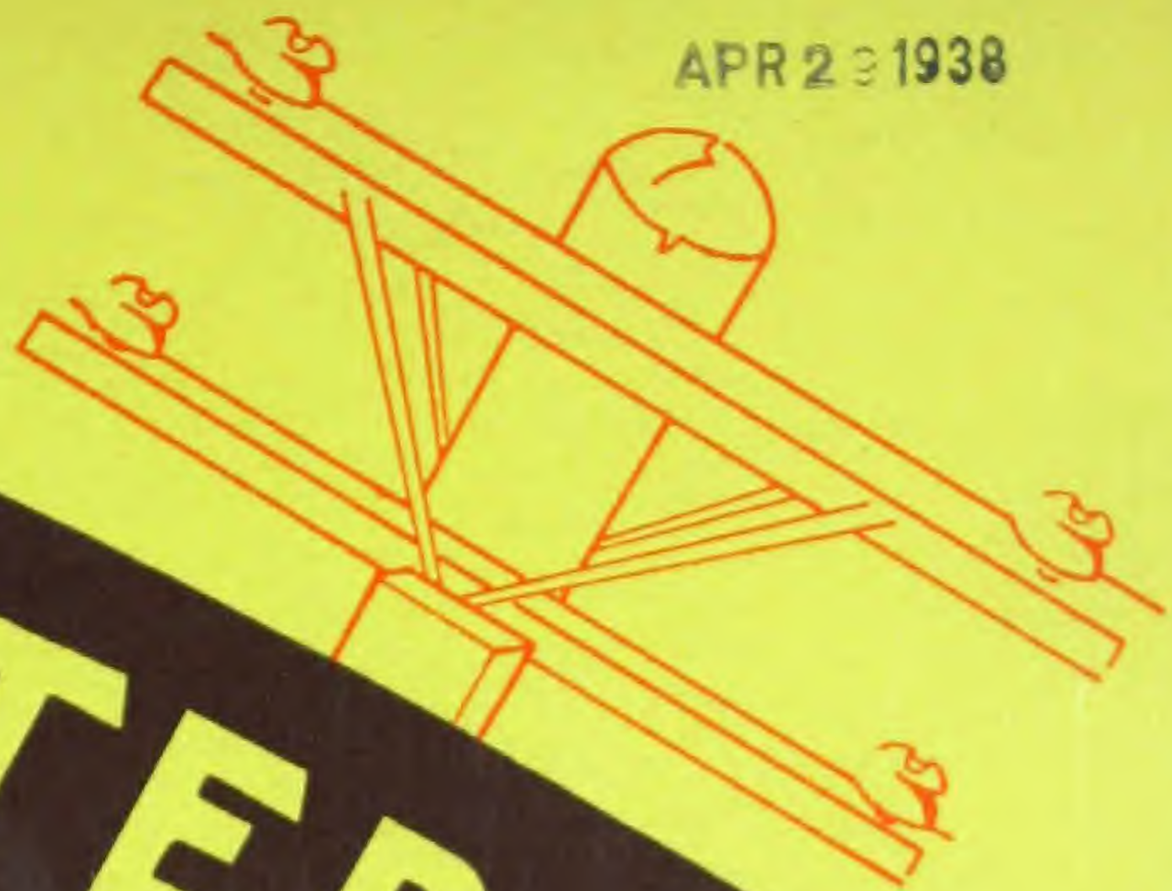
1188-1

O-B MATERIALS

FOR DISTRIBUTION AND FARM LINES



OHIO BRASS COMPANY

MANSFIELD, OHIO

PHILADELPHIA

COSTS NO MORE TO BUILD WITH O-B

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O-B MATERIALS

FOR PRIMARY DISTRIBUTION CIRCUITS AND FARM LINES

BULLETIN 640-H

OHIO BRASS COMPANY
MANSFIELD- - - - - OHIO
CANADIAN OHIO BRASS COMPANY, LTD., NIAGARA FALLS, ONT., CANADA

It Costs No More To Build With O-B

Low Cost Distribution and Farm Line Construction Can Be Achieved Without Sacrificing Safety and Dependability, and Without Incurring Expensive Early Maintenance, By Using O-B Equipment

Primary distribution circuits and farm lines must be completely dependable, but they must be built at as low a cost as possible. Providing service to customers entails a deep obligation—electrical energy must be available at all times, regardless of what the whims of the weather may bring. In the case of rural lines, because of promotional rates which have been offered and because the length of line per customer is comparatively great, it is necessary that the costs, both for the original construction and maintenance, be held to a minimum if the line is to be profitable.

O-B has provided the solution to this problem as far as insulators, clamps and similar equipment are concerned, by offering high-quality materials at low prices. No sacrifices in the high standards of O-B manufacture have been made in any of its distribution or farm line materials, and taking item for item, O-B is in line on the matter of cost. Hundreds of properties which have specified O-B materials have found that it costs no more to build with O-B. Being soundly designed and well manufactured, O-B materials require practically no maintenance and need not be replaced for many years, bringing unusual security and an additional saving to their users.

Ohio Brass engineers have designed a number of products especially for distribution and farm line construction to supplement the many other products, previously available, which were suitable for this work. With its present line of materials, O-B can meet your specifications for small pintype insulators, suspension insulators and fittings, strain insulators and fittings, pole hardware, all types of clamps, switch and bus insulators, bushings, and entrance tubes for any type of construction. In the following pages are shown each of the major types of O-B products offered for distribution circuits and rural electrification.

Glance through these pages to become familiar with the products. And keep this catalog handy for use in ordering materials. O-B will gladly furnish net prices to any shipping point upon request. These prices, and the high quality of the materials offered, will convince you that you can build completely dependable, trouble-free lines at a very low cost—that "It Costs No More To Build With O-B."

Typical Rural Construction

Drawings shown on the following four pages are typical of construction which is very generally used to meet the demand for reliable, low-cost lines in rural and suburban territory. The first type shown—the common neutral construction — is comparatively inexpensive and is applied chiefly to strictly rural single-phase lines with light loads. While low in first cost, single-phase common neutral construction is admirably suited for territories where future load growth is anticipated as these lines can be converted to three-phase, four-wire lines by the addition of a crossarm and two conductors. The other type of construction—the single or three-phase primary type with no primary neutral—is generally used for suburban lines which carry heavier loads. For each type, the suggested construction for each of two voltage ranges is shown, 2.4 to 7.5 kv. and 7.5 to 15.0 kv. The drawings show typical tangent, dead-end and angle designs for both types of construction in both voltage ranges. Typical corner construction is shown for the two higher-voltage types of construction.

All dimensions on the drawings meet the requirements of the National Electrical Safety Code. They are generally accepted as good construction for long span rural lines. The actual spacings to use, however, depend on the voltage and the span lengths, and they may have to be increased or decreased for specific line requirements.

Two sizes of Universal strain clamps are shown on the dead-end construction drawings. The choice between these two clamps depends largely on the size of conductor used.

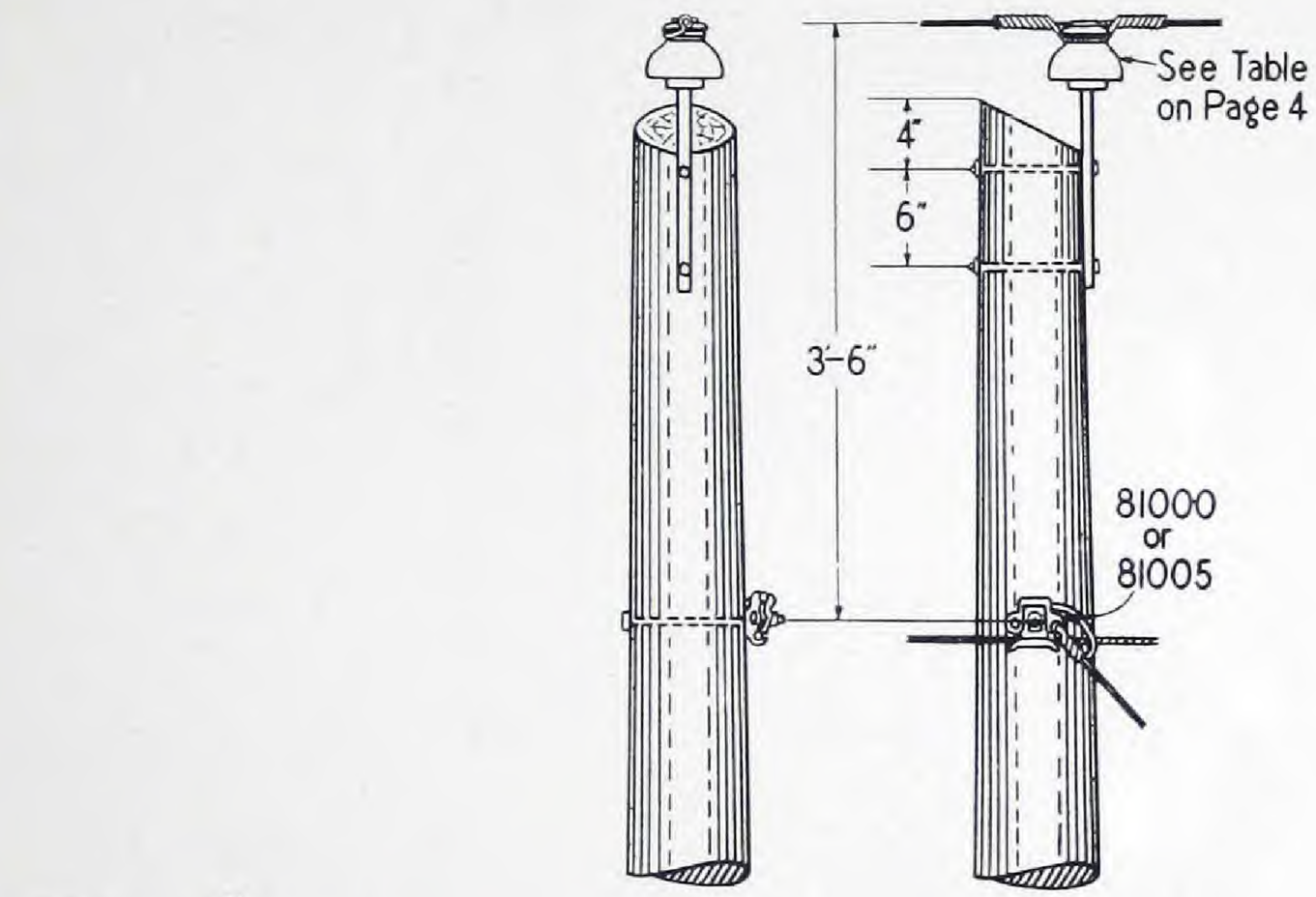
The neutral clamp, shown on the tangent common neutral construction drawings, is holding the neutral conductor and a service wire. This clamp also is used for holding the neutral conductor only, or for the neutral conductor plus service and ground wires.

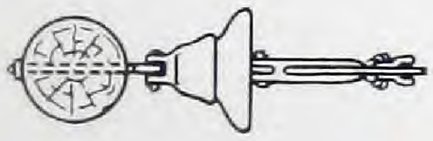
In building any line the insulation at dead-end points should be greater than the standard insulation of the line. This means that the flashover values of the suspension insulators should be greater than those of the pintypes.

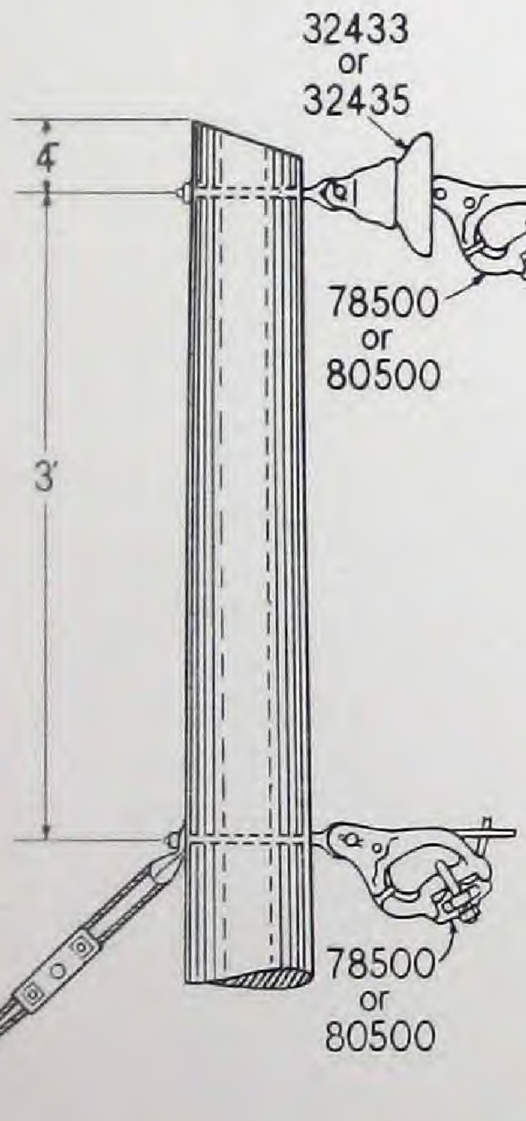
Ratings assigned to pintype insulators may be rather misleading as climatic and other operating conditions vary quite widely. For this reason, definite voltage ratings have not been assigned to them. Instead, the table below shows the minimum, ordinary and maximum voltages of lines on which these insulators have been used. The minimum voltage is recommended for unusually severe conditions due to lightning, dirt, or other local causes. The ordinary voltage is suggested for average conditions similar to those under which a majority of the insulators have operated. The maximum voltage is indicated for locations where conditions are extremely favorable.

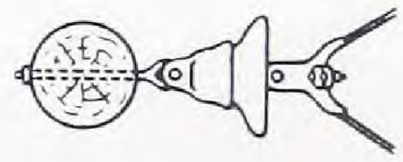
Catalog Number Standard	Kingpin	Minimum	Ordinary	Maximum
29207	34207	.....	2.4 kv.	4.4 kv.
12847 } 9404 }	34847	.....	4.4 kv.	6.9 kv.
12848	34848	4.4 kv.	6.9 kv.	11.0 kv.
12849	34849	6.9 kv.	11.0 kv.	13.8 kv.
12851	34851	6.9 kv.	13.8 kv.	23.0 kv.

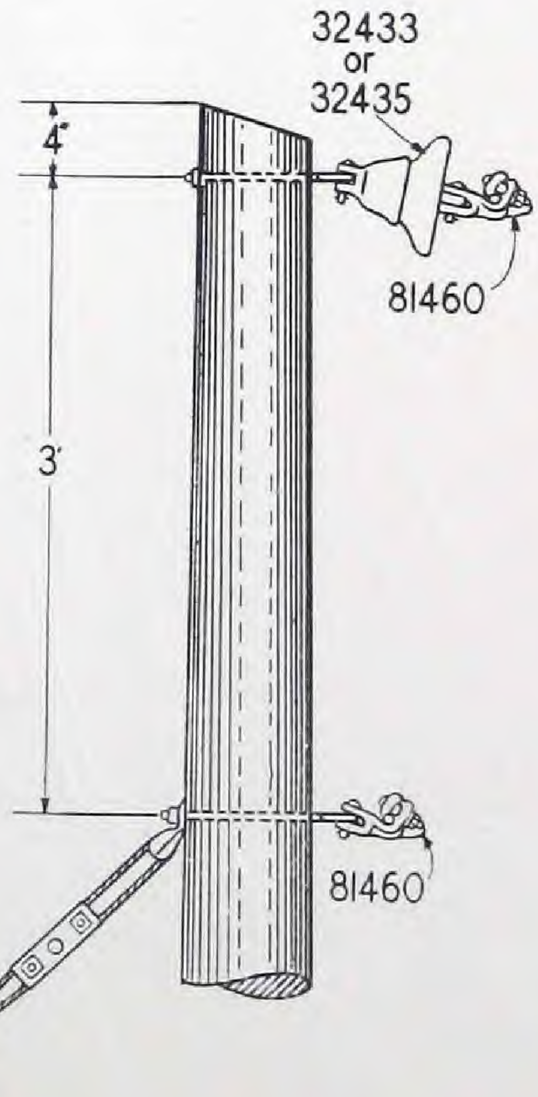
Common Neutral Construction
2.4--7.5 Kv.



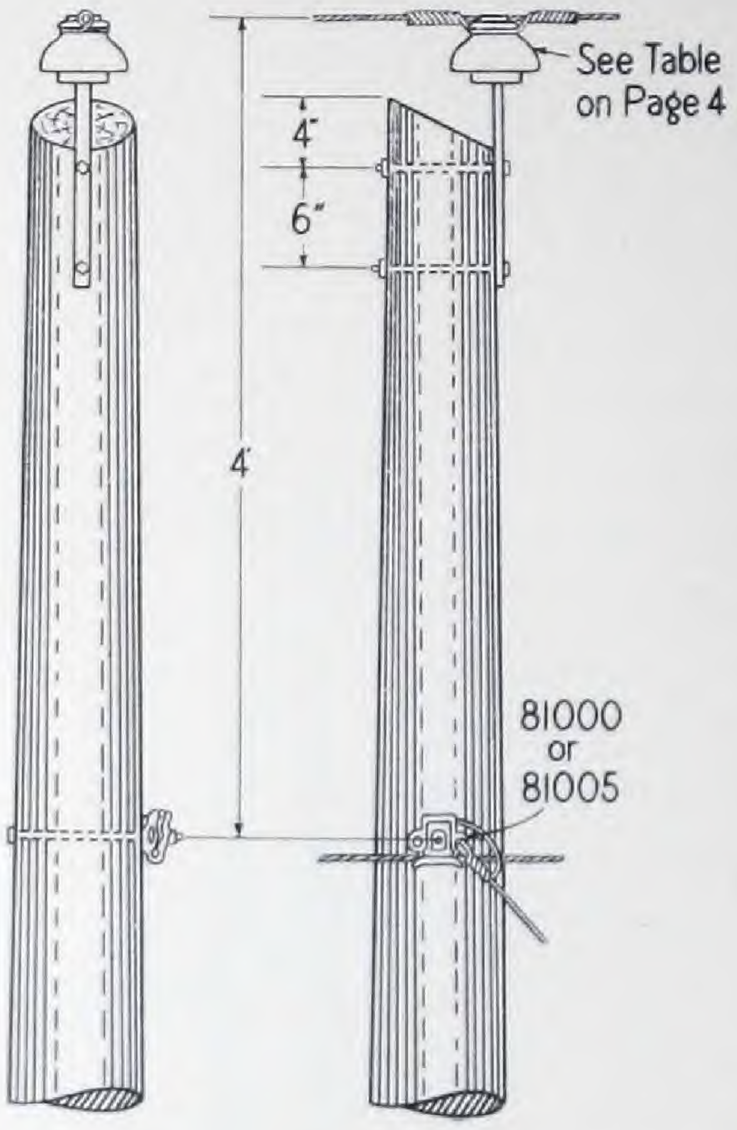


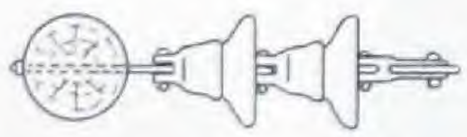


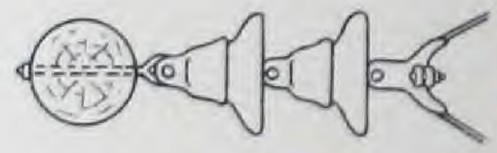


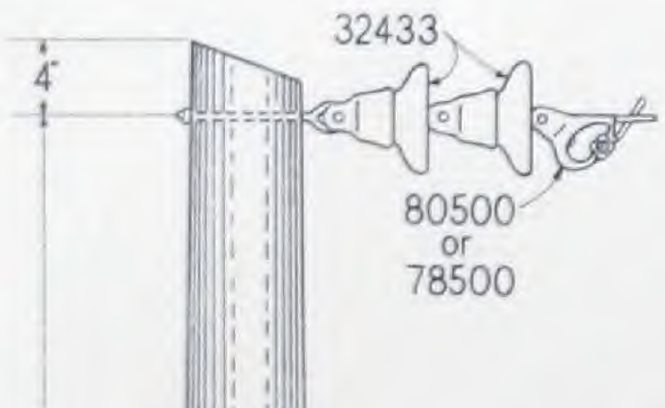


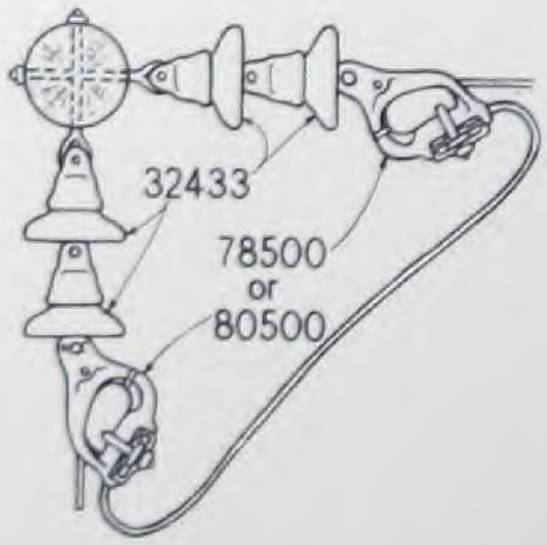
Common Neutral Construction
7.5--15 Kv.

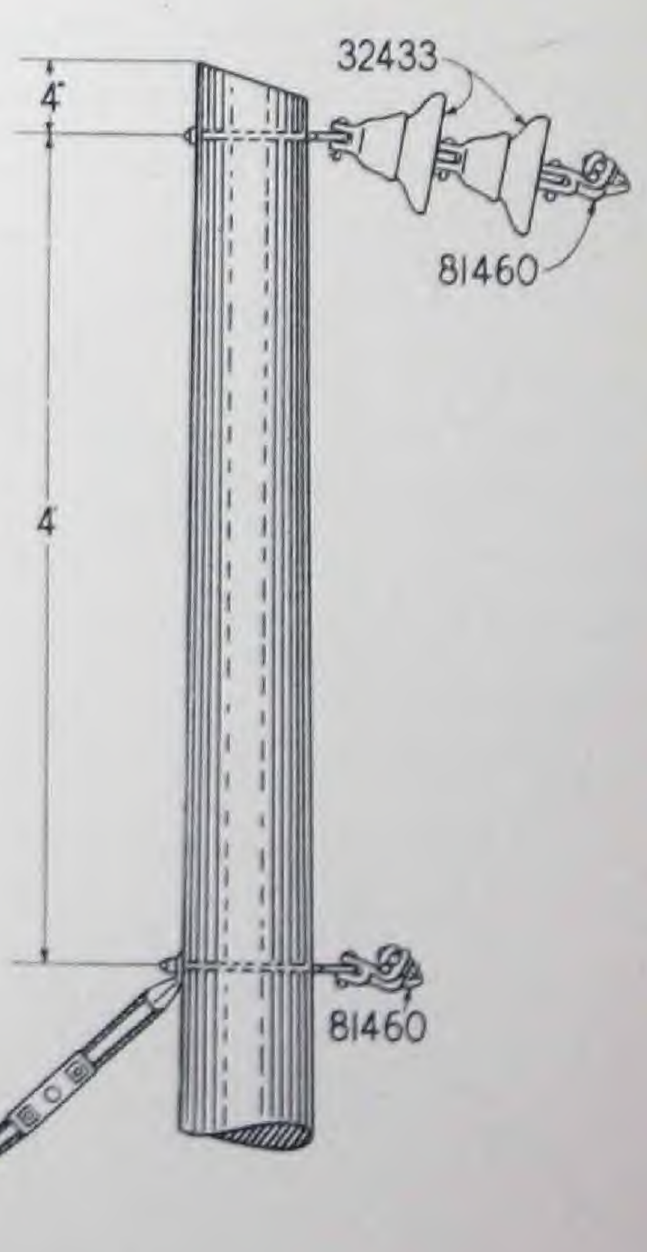




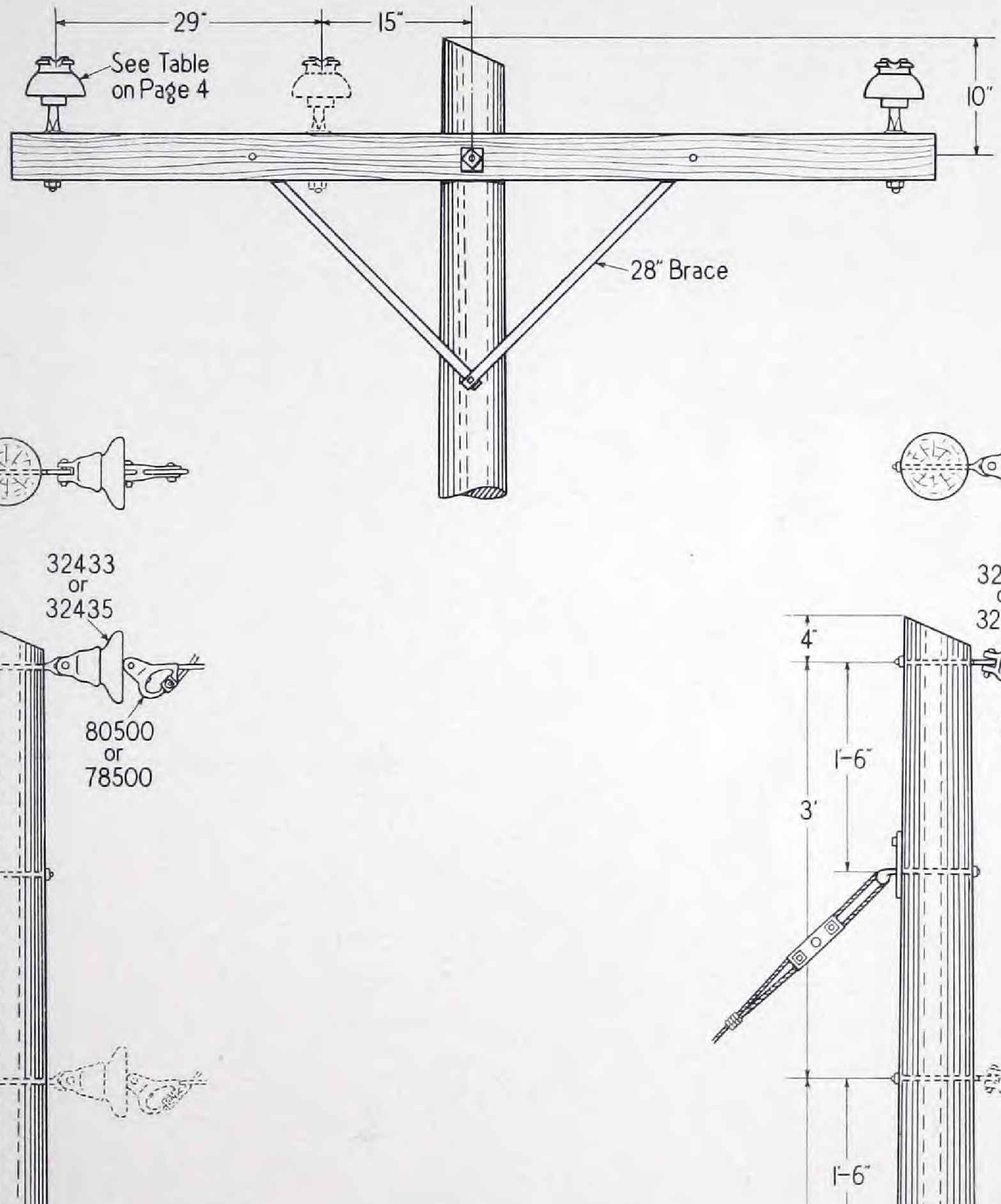




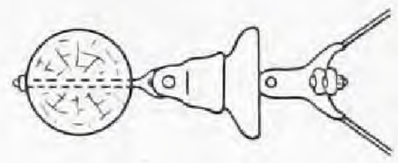




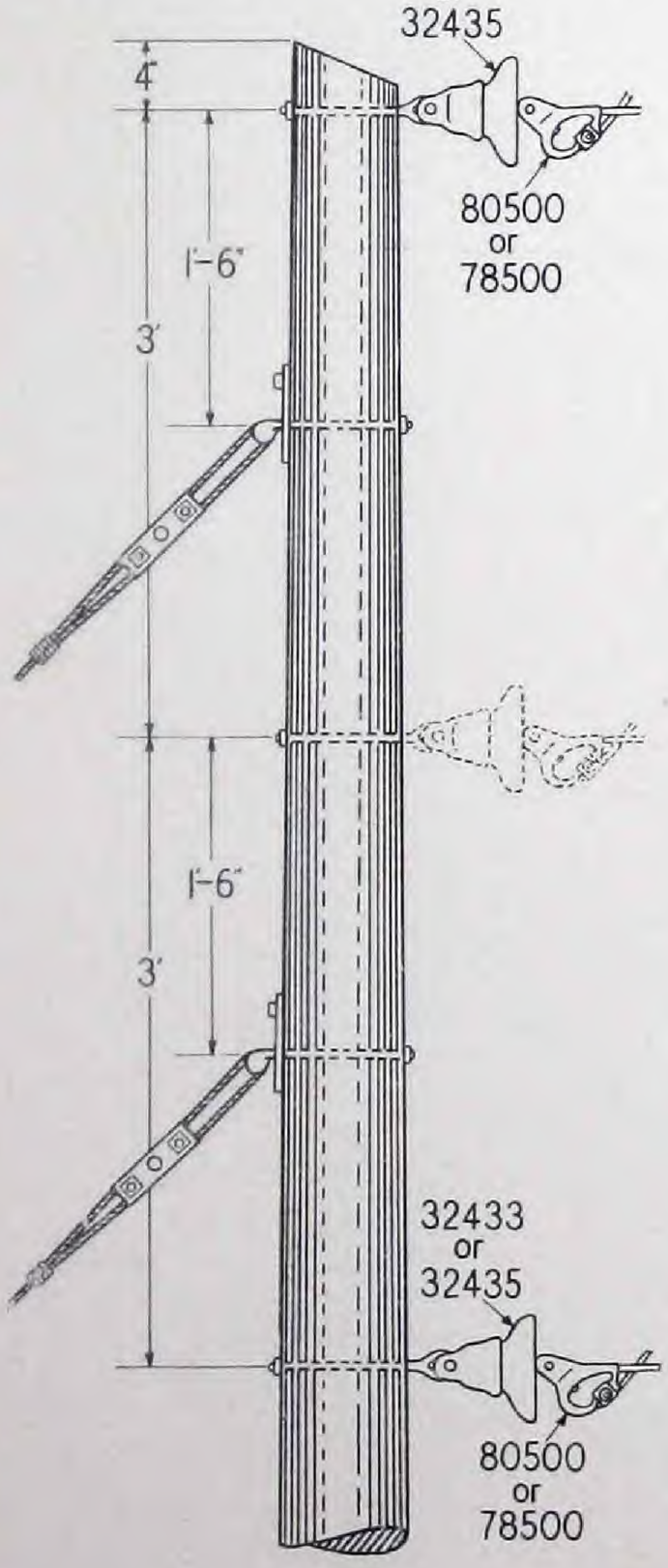
Single or 3-Phase Primary Construction
No Primary Neutral—2.4--7.5 Kv.

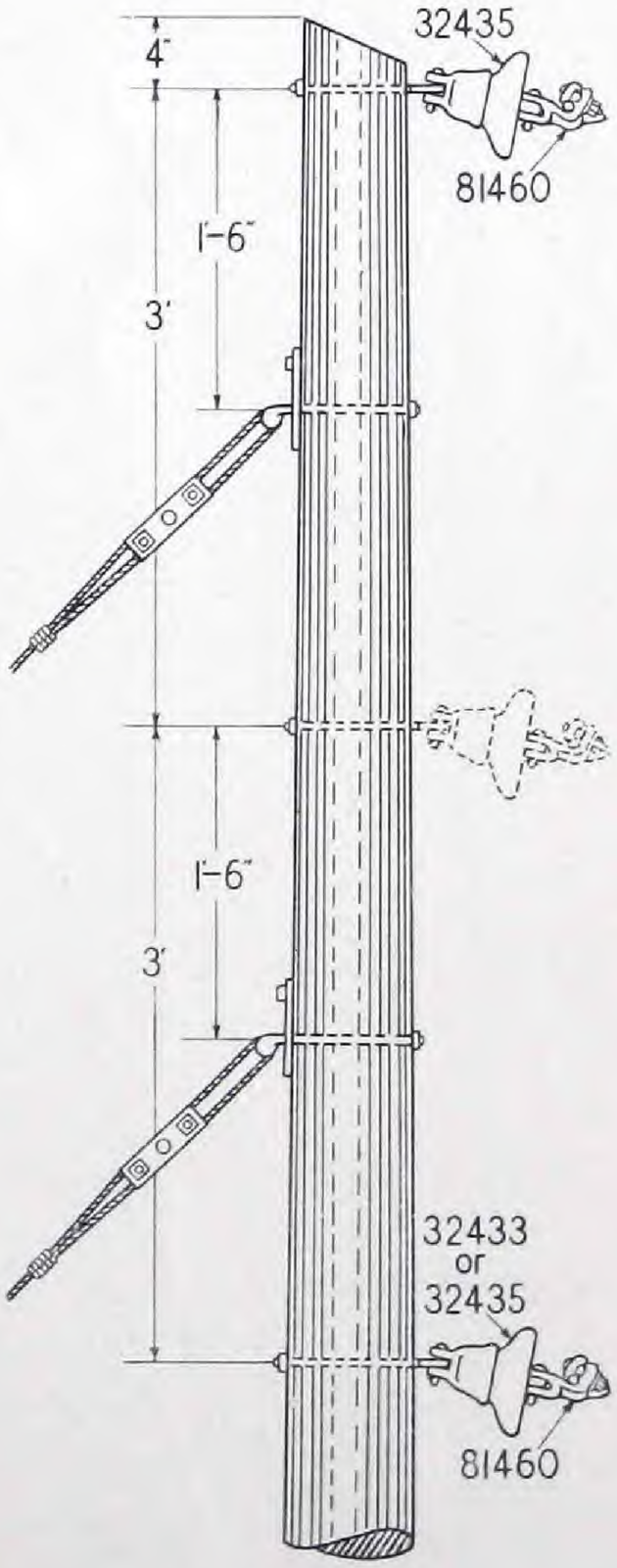


32433 or 32435

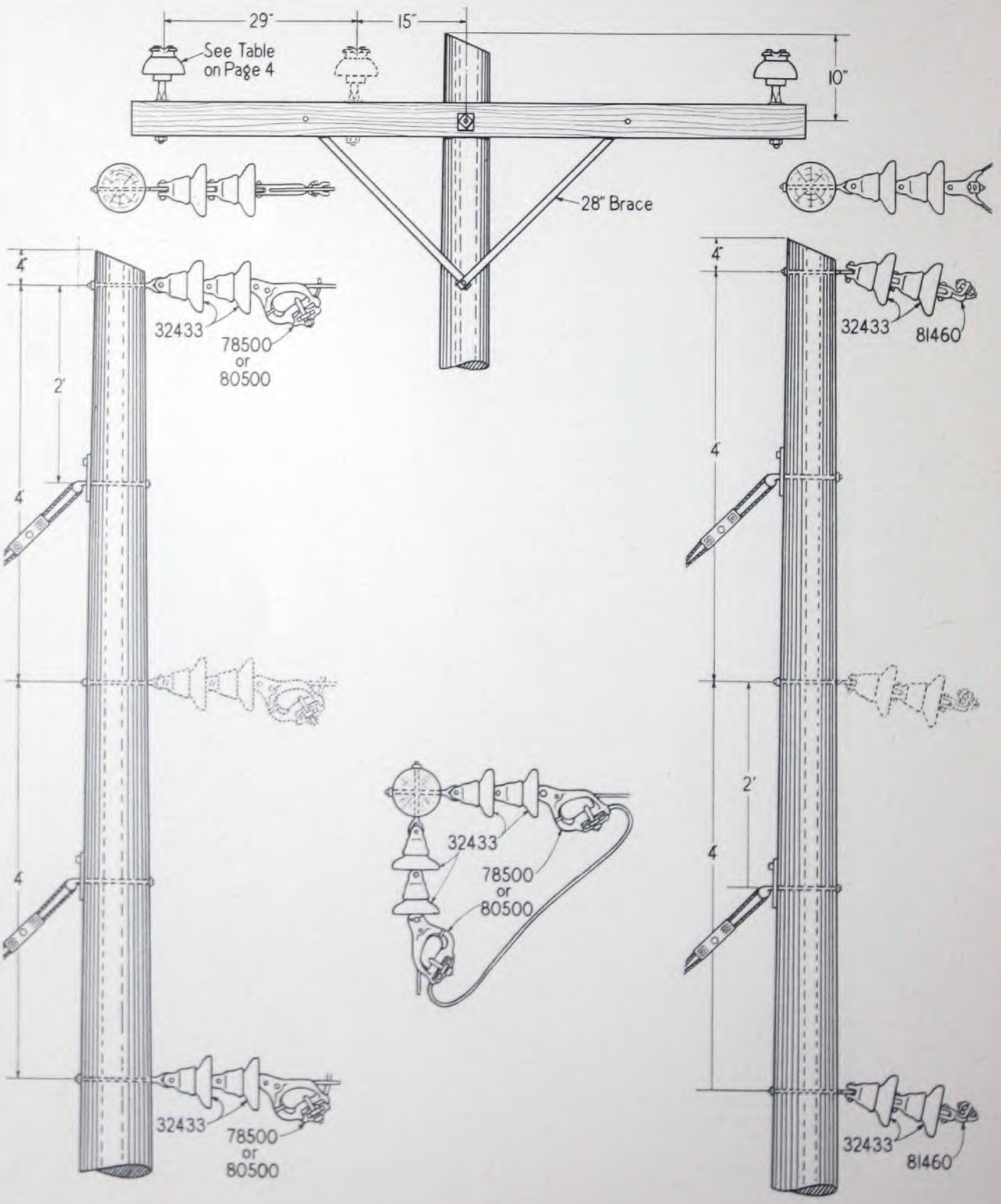


32433 or 32435





Single or 3-Phase Primary Construction
No Primary Neutral—7.5–15 Kv.



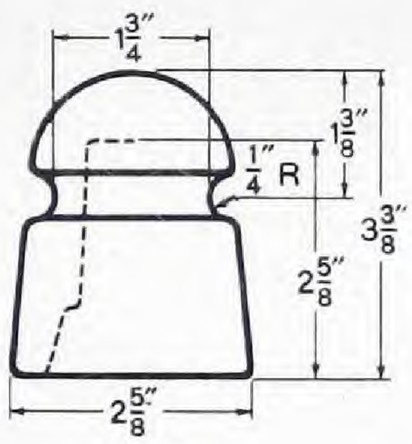
Small Pintype Insulators

O-B porcelain pintype insulators for low-voltage application are made of the same carefully selected materials as the insulators for high-voltage use. Subject to the same rigid control, inspections and tests during manufacture, they are of uniformly high quality. This extra care means that O-B small pintypes will give security, trouble-free service and maximum life—at the lowest possible overall cost.

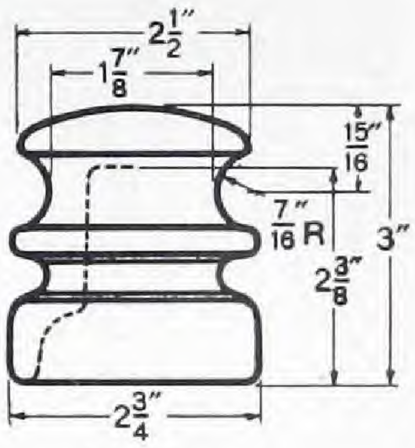
The smaller insulators are packed in cartons or in wooden crates, depending upon their size. The weight of individual packages is limited to permit handling with ease.

Small pintypes are regularly furnished with brown color. Other colors, such as white, blue or green, are sometimes used to designate special conductors or circuits, and insulators with any of these colors will be furnished if specified.

9404



10565



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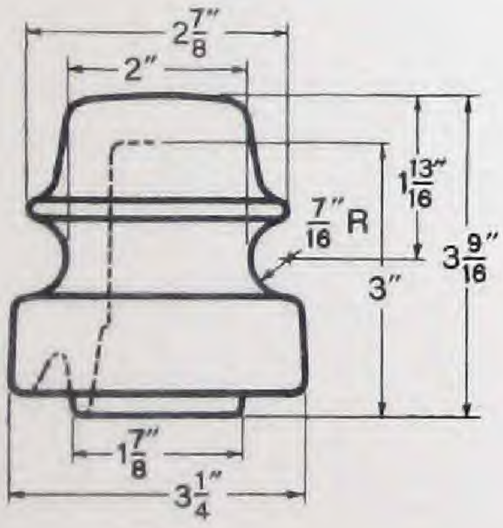

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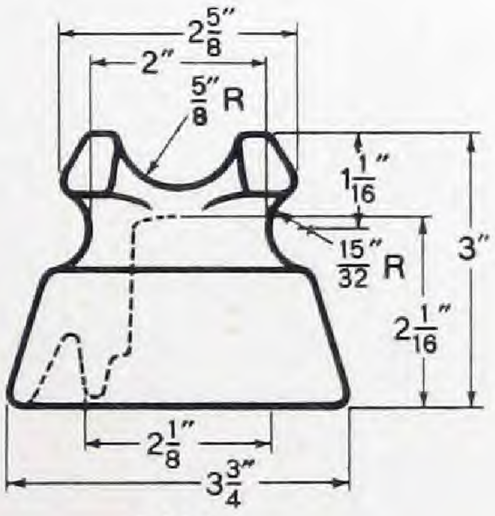
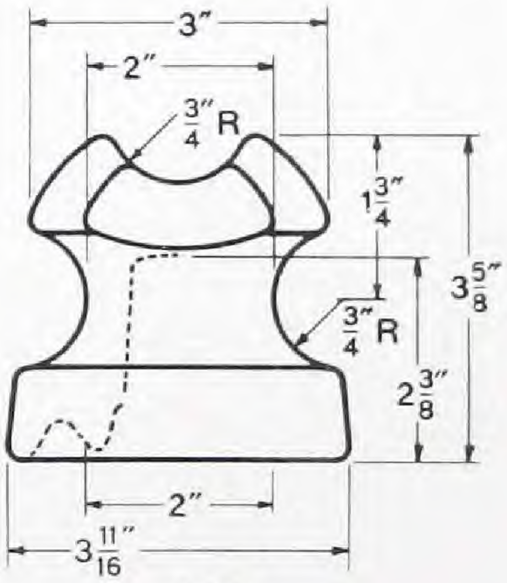


9404



9953

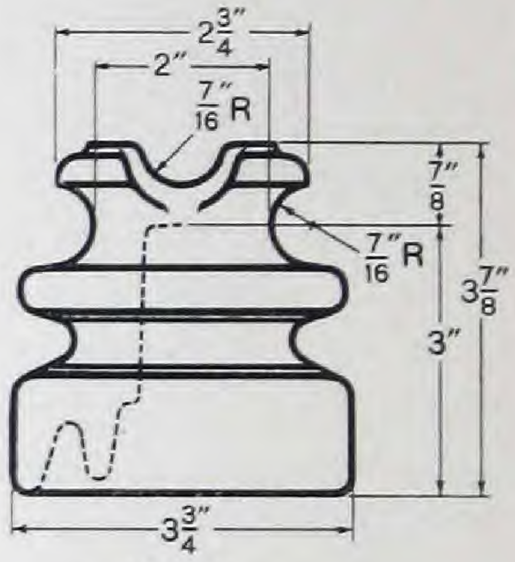
Catalog Number		10565	29207	34207	9404	9953
Code Word		aciyz	acjba	anhgu	acjed	acjfe
Type of Pin Hole		Thread	Thread	Thread	Thread	Thread
Dry Flashover	kv.	35	35	35	50	50
Wet Flashover	kv.	20	20	23	25	25
Leakage Distance	in.	3	4	4	4⅛	3½
Dry Arcing Distance	in.	2⅜	2 1/16	2⅞	3	2⅝
Wet Arcing Distance	in.	11/16	1	11/16	1¼	1 3/16
Mechanical Strength, Approximate	lb.	2000	3000	2500	2500	3000
Diameter of Pin Hole	in.	1	1	1	1	1
Minimum Length Pin	in.	4	4	4	4	4
Net Weight per 100	lb.	76	106	80	112	139
Packed Weight per 100, Domestic	lb.	85	111	84	125	150
Packed Weight per 100, Export	lb.	95	130	100	150	175
Number in Standard Package, Domestic		100	50	75	50	50
Number in Standard Package, Export		200	100	225	100	100
Type of Packing, Domestic		Carton	Carton	Carton	Carton	Carton
Type of Packing, Export		Crate	Crate	Crate	Crate	Crate
Package Size, Export	in.	17x15x29	18x19x20	16x17x32½	17x20x22	18x20x22

Small Pintype

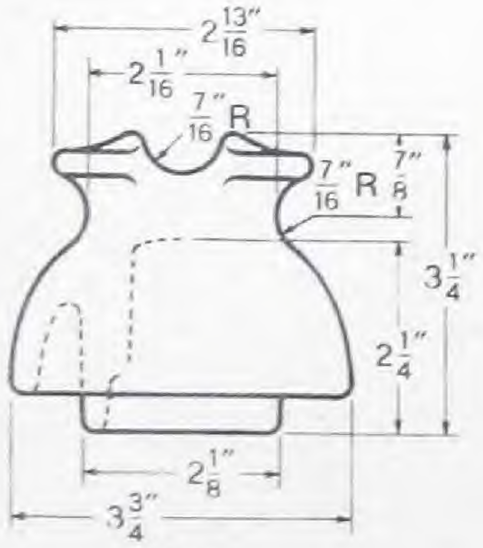
12849-12850-28177

Whatever your requirements for small pintype insulators may be, O-B can fulfill your needs. Sizes for 2.2 to 23 kv. service in both standard and multi-ridge designs are available. The standard O-B designs, with petticoats on the interior, are those which have given satisfactory service for a great

Standard O-B small pintype insulators are available in eight sizes. All of these designs have given satisfactory service for a great many years.



34848



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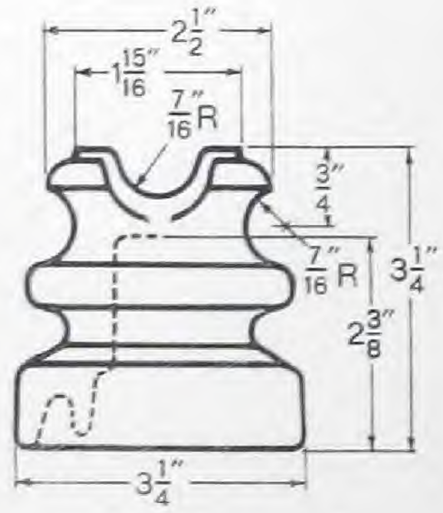

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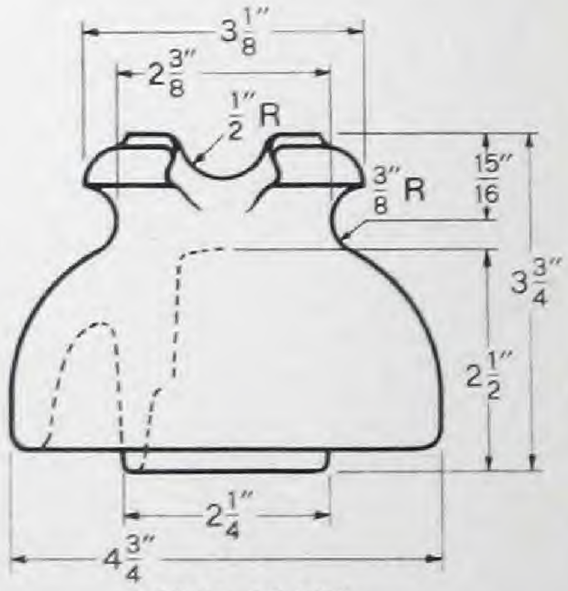
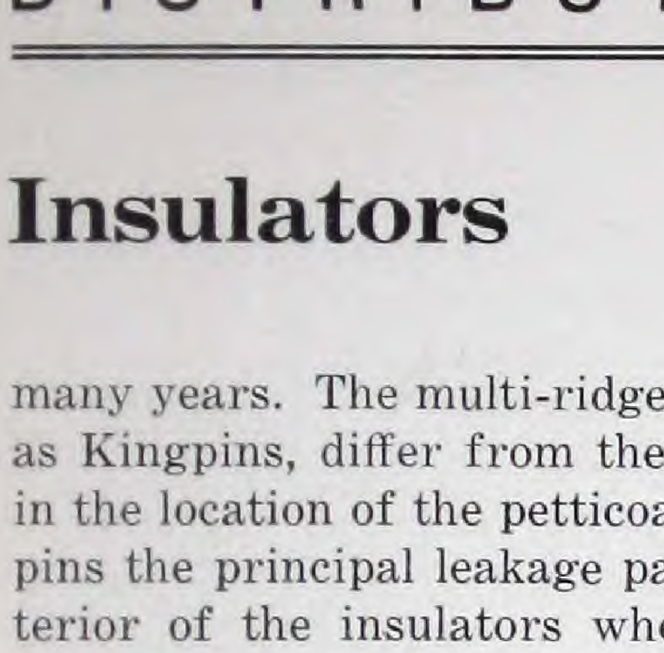


12848-29429

Catalog Number		12847	34847	12848	29429	34848	12849	12850
Code Word		acjii	anhiw	acjoo	acjuu	anhky	ackaz	ackca
Type of Pin Hole		Thread	Thread	Thread	Sanded	Thread	Thread	Thread
Dry Flashover	kv.	50	55	65	65	65	70	70
Wet Flashover	kv.	30	35	35	35	40	40	40
Leakage Distance	in.	4¾	6	7½	7½	7½	9	9
Dry Arcing Distance	in.	3⅛	3½	4¼	4¼	4½	4½	4½
Wet Arcing Distance	in.	1 5/16	1	1¾	1¾	1 1/16	2¼	2¼
Mech. Strength, Approx.	lb.	2500	2500	2500	2500	2500	3000	3000
Diameter of Pin Hole	in.	1	1	1	1	1	1	1⅜
Minimum Length Pin	in.	4	4	5	5	5	6	6
Net Weight per 100	lb.	131	115	220	220	185	310	310
Packed Wt. per 100, Dom.	lb.	145	120	275	275	192	340	340
Packed Wt. per 100, Exp.	lb.	175	129	315	315	224	400	400
No. in Std. Package, Dom.		50	50	40	40	32	27	27
No. in Std. Package, Exp.		100	150	80	80	96	54	54
Type of Packing, Domestic		Carton	Carton	Carton	Carton	Carton	Carton	Carton
Type of Packing, Export		Crate	Crate	Crate	Crate	Crate	Crate	Crate
Package Size, Export	in.	18½x20x21	19x19x25	18x20½x27	18x20½x27	17x18x28½	16x18x36	16x18x36

Insulators

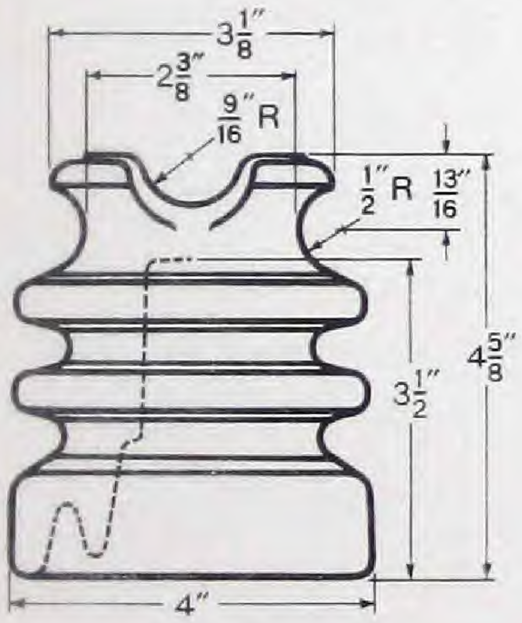
many years. The multi-ridge designs, known as Kingpins, differ from the standard types in the location of the petticoats. In the Kingpins the principal leakage path is on the exterior of the insulators where the air and wind action tend to keep them clean.



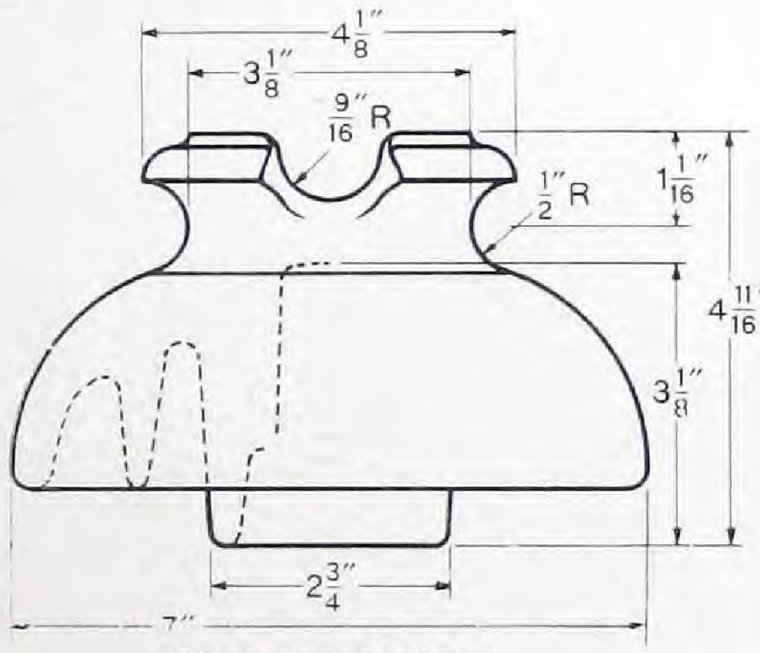
12849-12850-28177

Multi-ridge O-B pintypes, known as Kingpins, are available in five sizes. In these designs the principal leakage path is on the exterior of the insulators.

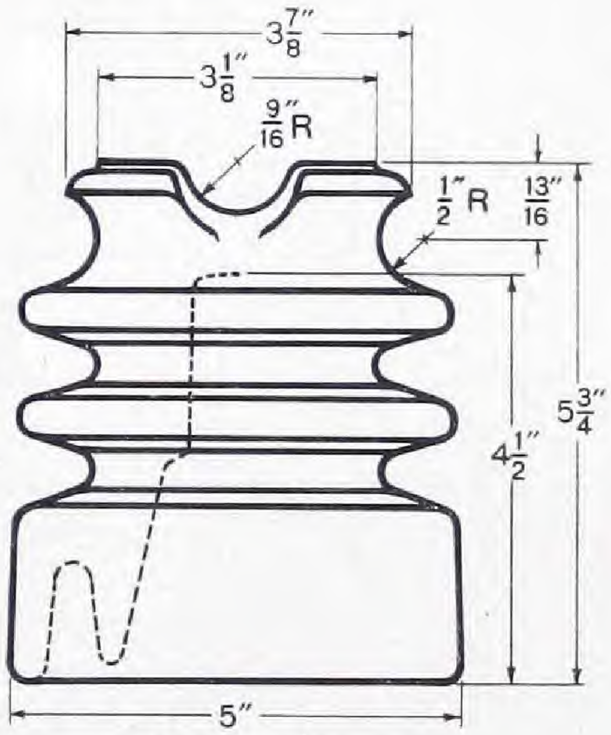
34851-34852



34849



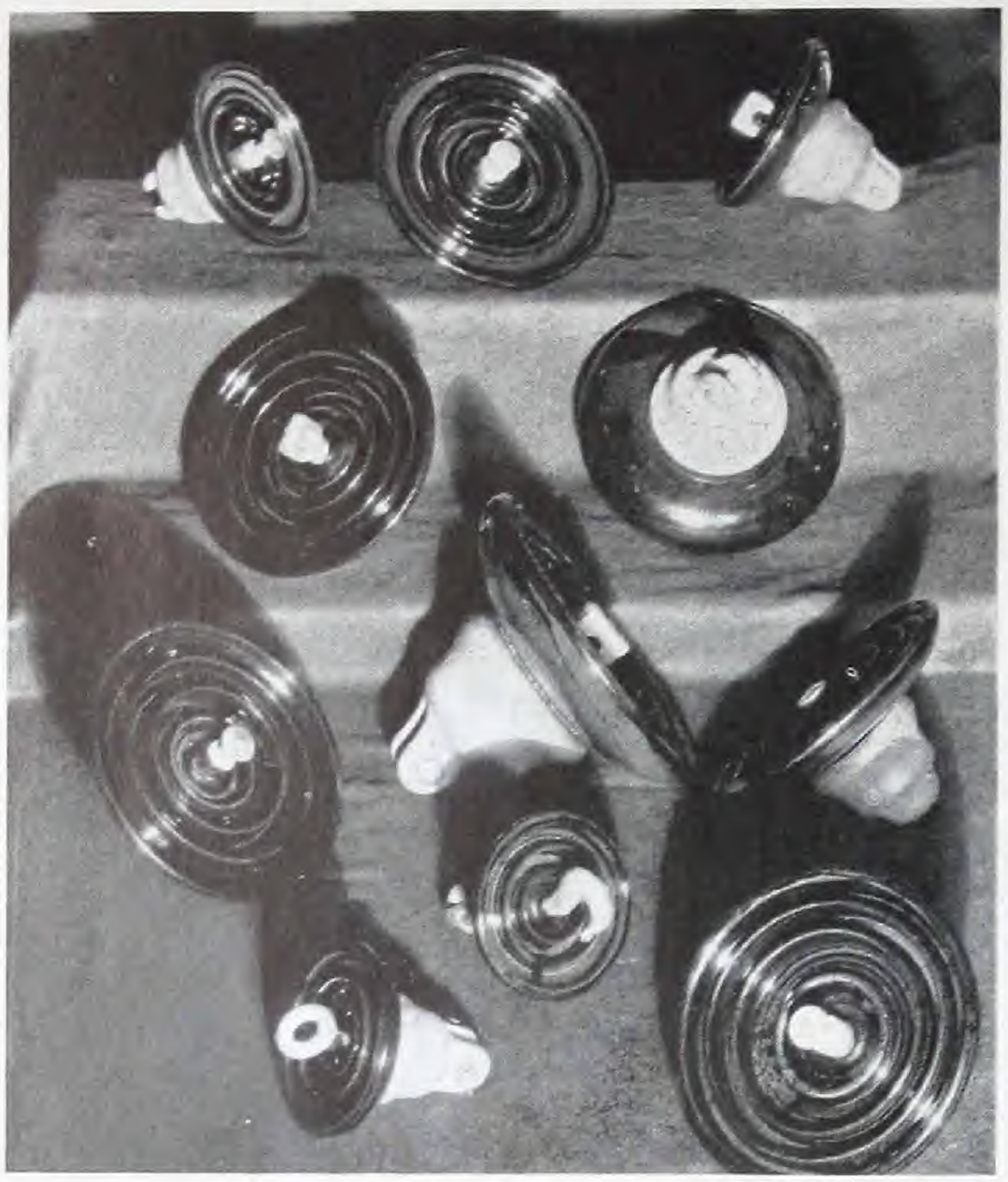
12851-12852-26851



34851-34852

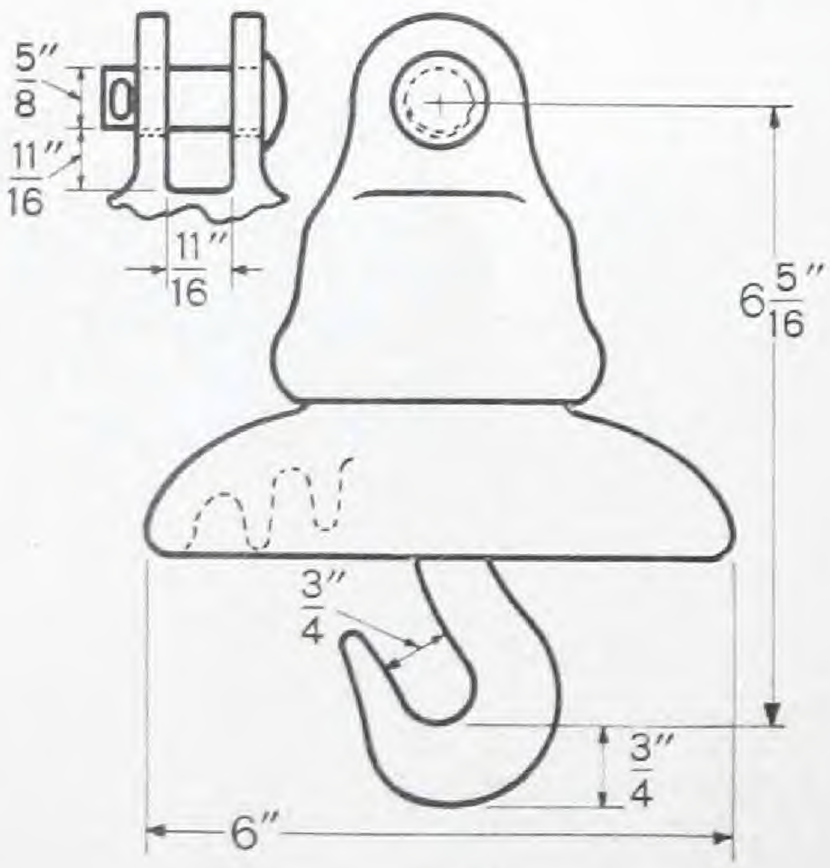
Catalog Number	28177	34849	12851	12852	26851	34851	34852
Code Word	ackec	anhna	ackih	ackji	ackon	anhuh	anhre
Type of Pin Hole	Sanded	Thread	Thread	Thread	Sanded	Thread	Thread
Dry Flashover ..... kv.	70	75	90	90	90	90	90
Wet Flashover ..... kv.	40	45	50	50	50	50	50
Leakage Distance ..... in.	9	9½	12¾	12¾	12¾	13	13
Dry Arcing Distance ..... in.	4½	5⅜	6⅜	6⅜	6⅜	7	7
Wet Arcing Distance ..... in.	2¼	1¼	3	3	3	2	1⅞
Mech. Strength, Approx. lb.	3000	3000	3000	3000	3000	3000	3000
Diameter of Pin Hole ..... in.	1⅜	1	1	1⅜	1⅜	1	1⅜
Minimum Length Pin..... in.	6	6	7	7	7	7	7
Net Weight per 100 ..... lb.	310	275	480	480	480	525	525
Packed Wt. per 100, Dom. lb.	340	285	615	615	615	550	550
Packed Wt. per 100, Exp. lb.	400	336	635	635	635	650	650
No. in Std. Package, Dom.....	27	24	24	24	24	12	12
No. in Std. Package, Exp.....	54	72	24	24	24	36	36
Type of Packing, Domestic....	Carton	Carton	Carton	Carton	Carton	Carton	Carton
Type of Packing, Export	Crate	Crate	Crate	Crate	Crate	Crate	Crate
Package Size, Export ..... in.	16x18x36	15x18x33	9x19x40	9x19x40	9x19x40	18x22x22½	18x22x22½

Suspension



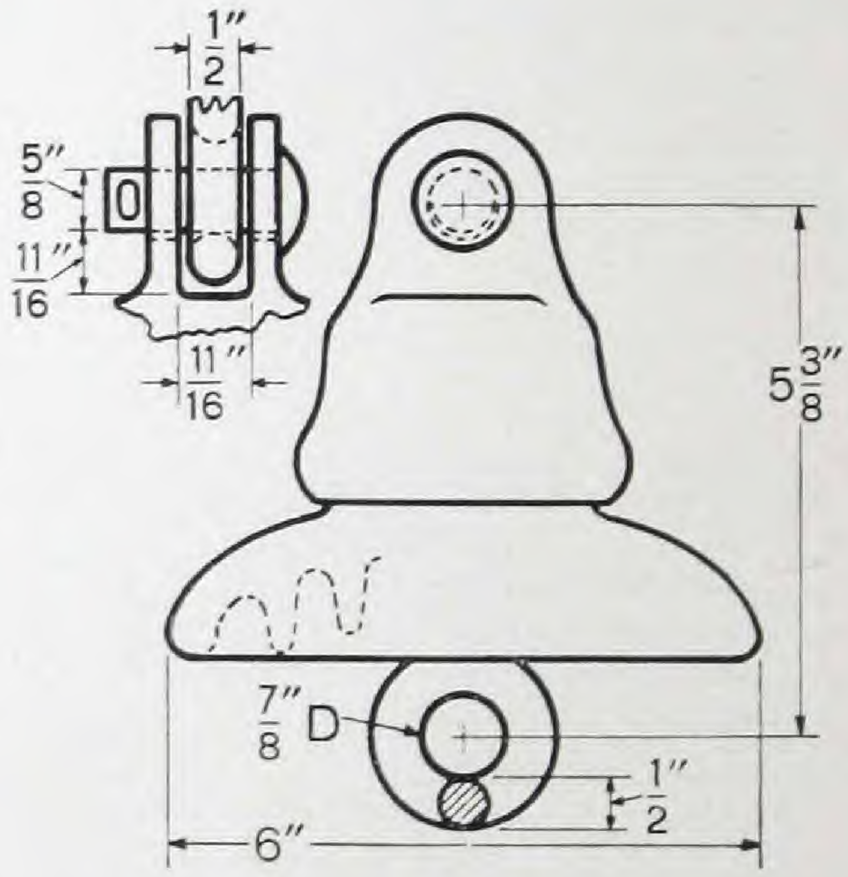
O-B offers five classes of suspension insulators, those with a 12-inch diameter and a 36,000-lb. M. & E. rating, 10-inch 25,000-lb. units, 10-inch 9,000—15,000-lb. units, 7½-inch 15,000-lb. units and 6-inch 8,000—10,000-lb. units. The accompanying drawings and catalog data are of the 6-inch insulators, commonly used on low-voltage distribution circuits and farm lines, and the 7½-inch insulators, for those distribution circuits which need insulators with higher electrical or mechanical characteristics.

All O-B suspensions are manufactured and assembled under a strict system of technical



32431

Catalog Number		32431
Code Word		abaai
Dry Flashover (1 Unit)	kv.	50
Wet Flashover (1 Unit)	kv.	30
Leakage Distance	in.	7
Dry Arcing Distance	in.	4.2
Wet Arcing Distance	in.	1.8
M. & E. Rating	lb.	8000
Standard Package, No. of Units		8
Net Weight per 100	lb.	515
Packed Weight per 100, Domestic	lb.	663
Packed Weight per 100, Export	lb.	670
Package Size, Export	in.	8x10x42



32433

60-Cycle String Flashover Values

No. of Units	Dry Kv.	Wet Kv.
2	115	60
3	175	95

Catalog Number		32433
Code Word		ababj
Dry Flashover (1 Unit)	kv.	50
Wet Flashover (1 Unit)	kv.	30
Leakage Distance	in.	7
Dry Arcing Distance	in.	4.2
Wet Arcing Distance	in.	1.8
M. & E. Rating	lb.	10000
Standard Package, No. of Units		6
Net Weight per 100	lb.	490
Packed Weight per 100, Domestic	lb.	542
Packed Weight per 100, Export	lb.	687
Package Size, Export	in.	9x10x36

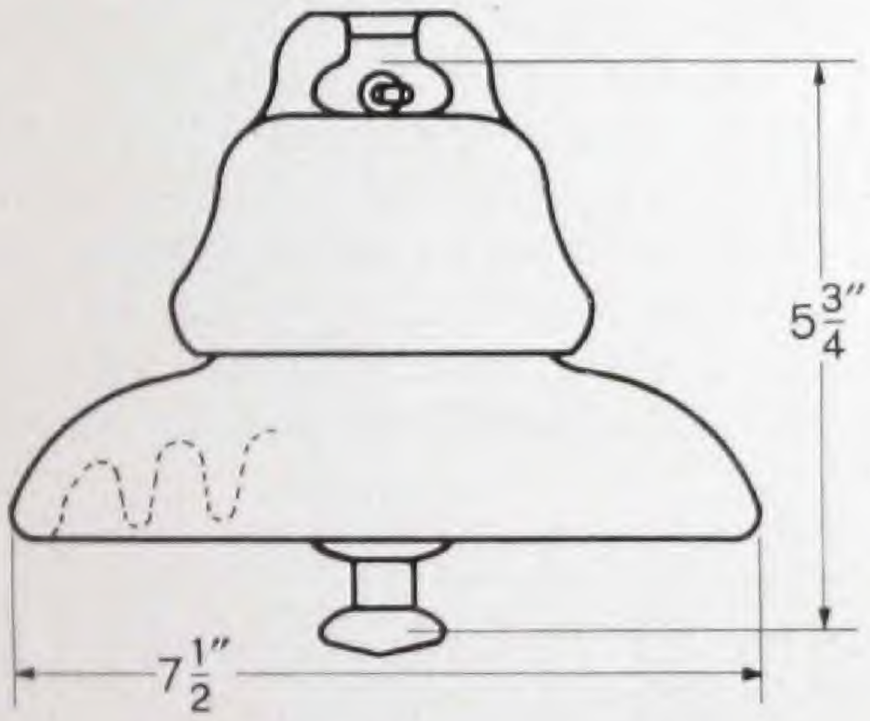
Insulators

control. This care in manufacture, along with rigid inspections and tests, assures uniformity in all parts and assembled units.

O-B suspension insulators are noted for their long life, achieved by using a design which provides stability of all component parts. Mechanical stability results from insured return of cap and pin to normal after repeated cycles of mechanical and thermal loading, and from correct stress distribution over the working surfaces of the porcelain. Electrical stability results from adequate leakage length, high puncture values, and freedom from corona and contamination. High-quality porcelain, the treated sanded surface, and the uniformity in manufacture are other reasons for the long life.

32433

32434

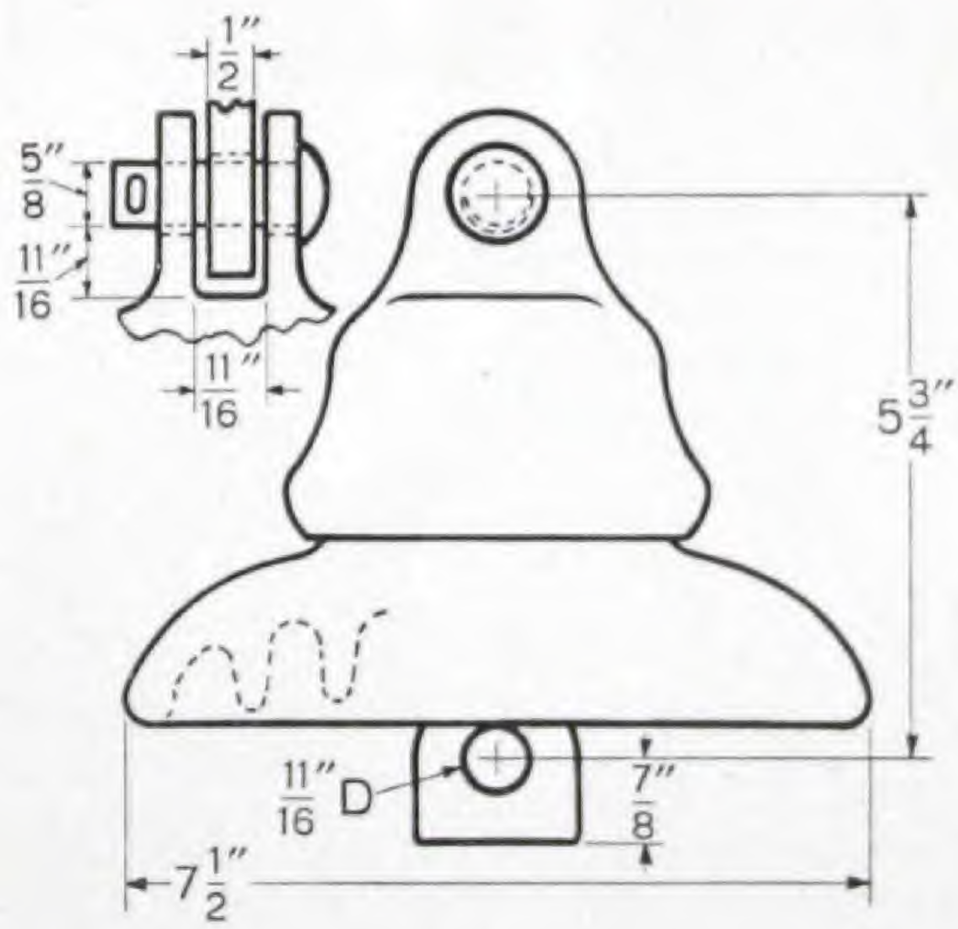


32434

60-Cycle String Flashover Values

No. of Units	Dry Kv.	Wet Kv.
2	130	70
3	190	105
4	240	145

Catalog Number		32434
Code Word		allxe
Dry Flashover (1 Unit)	kv.	65
Wet Flashover (1 Unit)	kv.	40
Leakage Distance	in.	8.2
Dry Arcing Distance	in.	5.7
Wet Arcing Distance	in.	2.7
M. & E. Rating	lb.	15000
Standard Package, No. of Units		6
Net Weight per 100	lb.	750
Packed Weight per 100, Domestic	lb.	858
Packed Weight per 100, Export	lb.	958
Package Size, Export	in.	9x10x37



32435

60-Cycle String Flashover Values

No. of Units	Dry Kv.	Wet Kv.
2	130	70
3	180	105
4	230	145

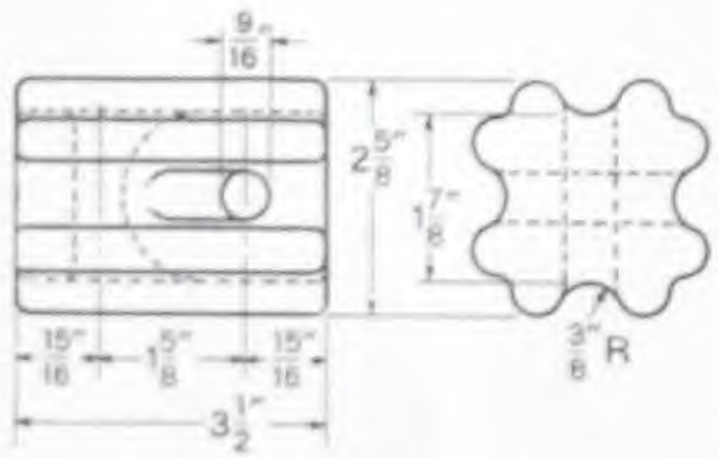
Catalog Number		32435
Code Word		abadl
Dry Flashover (1 Unit)	kv.	65
Wet Flashover (1 Unit)	kv.	40
Leakage Distance	in.	8.2
Dry Arcing Distance	in.	5.7
Wet Arcing Distance	in.	2.7
M. & E. Rating	lb.	15000
Standard Package, No. of Units		6
Net Weight per 100	lb.	755
Packed Weight per 100, Domestic	lb.	850
Packed Weight per 100, Export	lb.	950
Package Size, Export	in.	9x10x37

Porcelain Strain

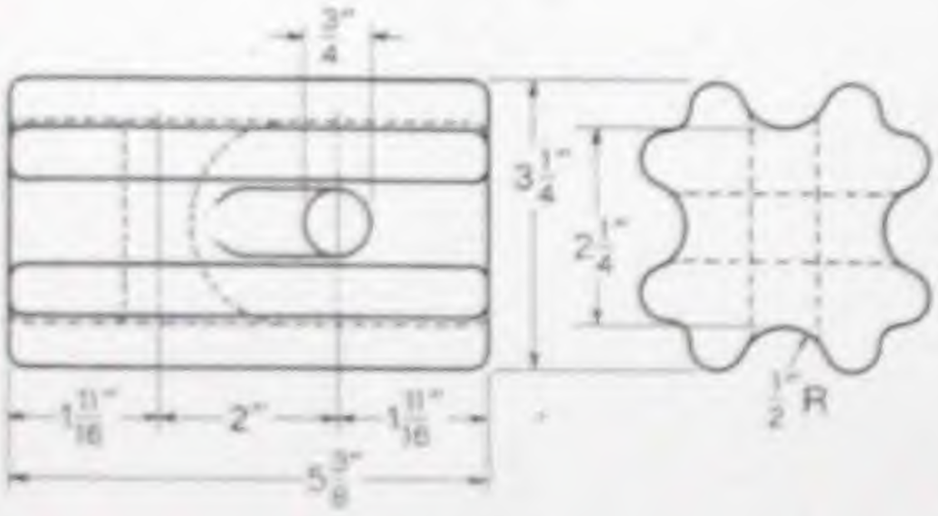
Several sizes and styles of O-B strain insulators and fittings are available.

O-B strain insulators are made of the same wet ware porcelain as used in the high-voltage line insulators. They are fired under the same exacting control and receive the same care in handling and inspecting as do the larger insulators. They are primarily intended for guy or span-wire insulation, but they may also be used for low-voltage dead-ends.

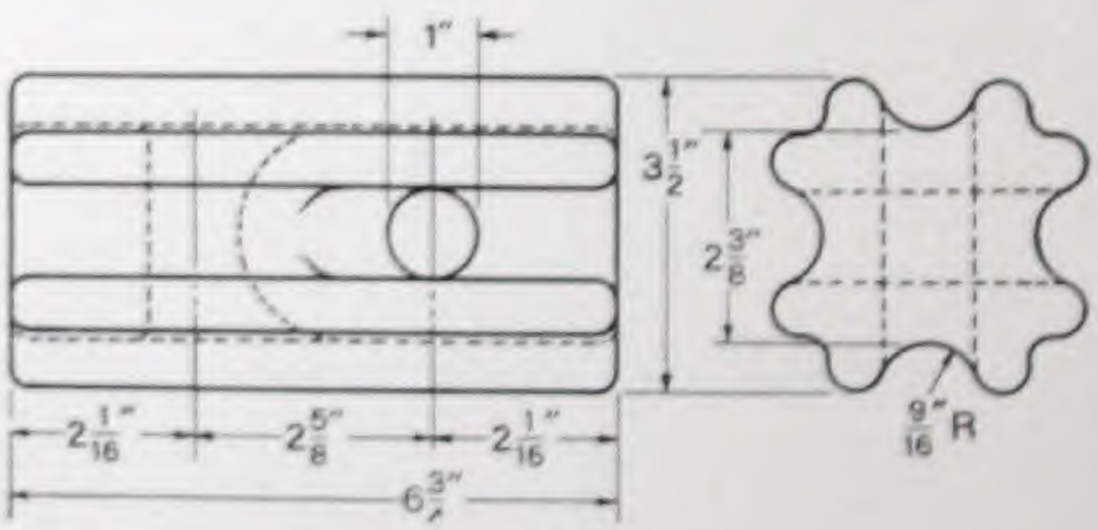
The multi-fin insulators, shown on this page, are rugged and not susceptible to mechanical breakage under ordinary conditions. Type XH insulators, shown on the opposite page, have well-rounded surfaces and corners. This feature makes them exceptionally rugged, permitting rough handling or severe service without breakage. In both types the holes are straight, making their assembly easy even with stiff guy strands. Mechanical strength



31350



31351



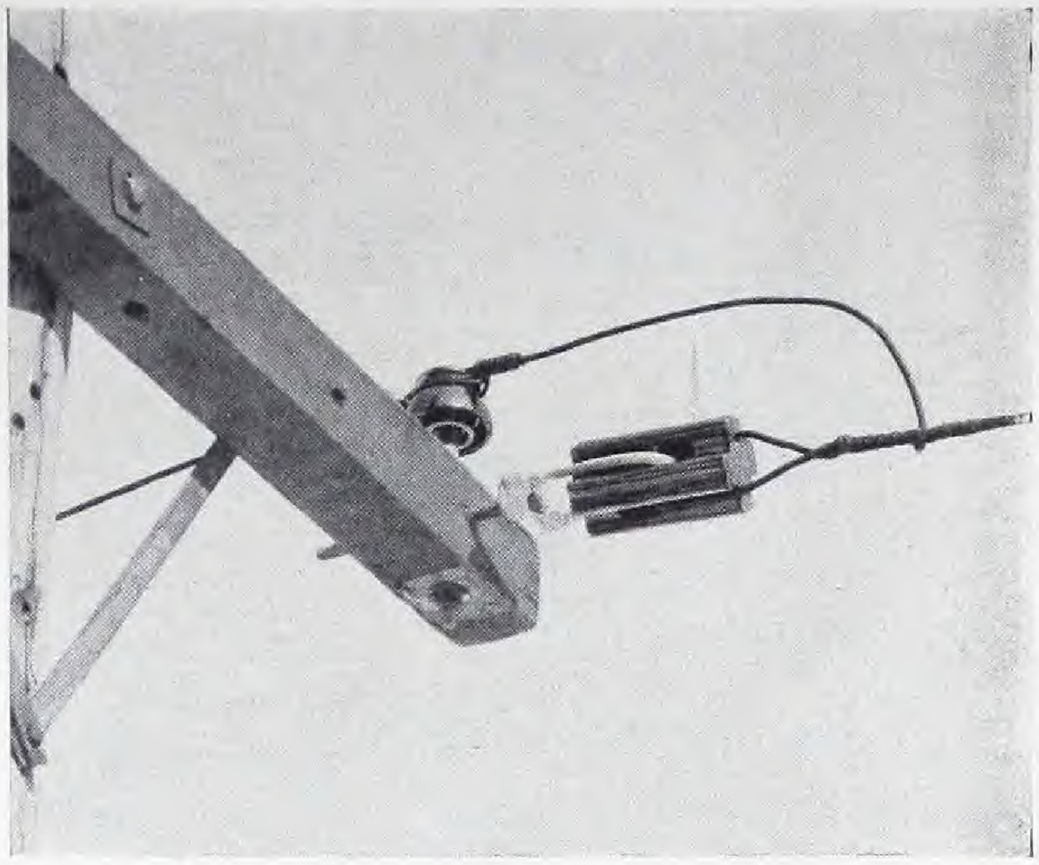
31352

Catalog Number		31350	31351	31352
Code Word		adhux	adhvy	adhya
Dry Flashover	kv.	30	35	40
Wet Flashover	kv.	17	20	24
Leakage Distance	in.	2⅛	2⅝	2⅝
Rated Ultimate Strength	lb.	10000	12000	20000
Packed Weight per 100, Domestic	lb.	140	321	448
Packed Weight per 100, Export	lb.	159	362	491
Number in Standard Package, Domestic		50	25	20
Number in Standard Package, Export		100	50	40
Package Size, Export	in.	16x17x18	14x19x21	17x17x23

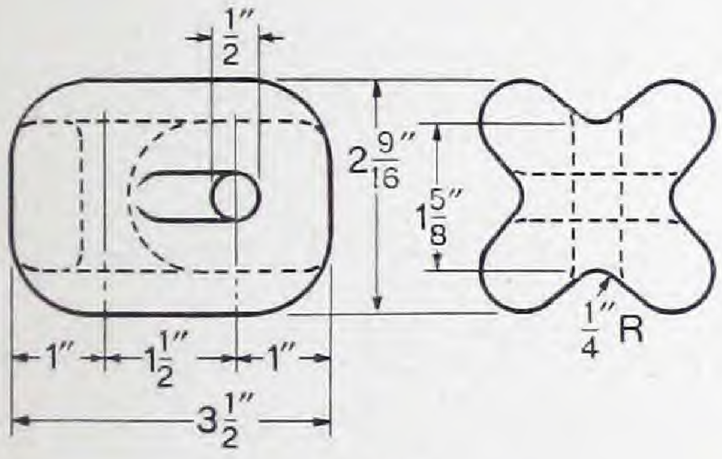
Insulators

ratings are values which may be developed with hard drawn copper or mild steel cable.

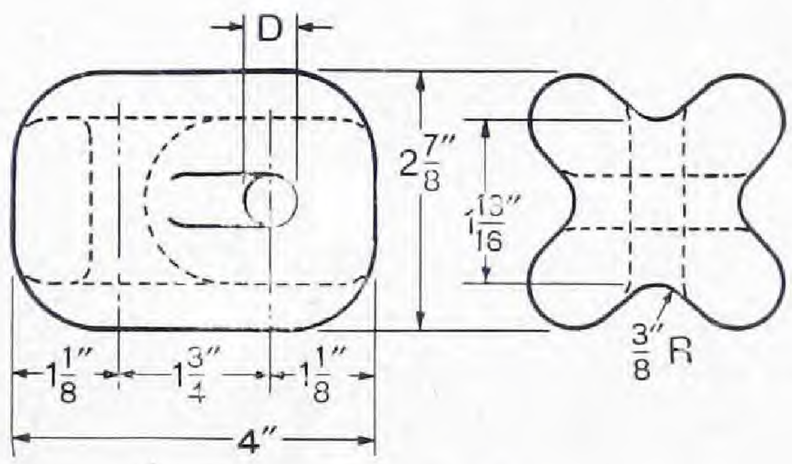
The O-B strain insulator fittings, shown on the following pages, offer greater assembled strength and added ease of installation. Five sizes of bails will fit 120 different strain insulators, regardless of make. To these five bails, four types of yoke castings may be applied. With this selection of yokes, any needed assembly may be secured. With the flexible strand, such as used in these fittings, pressure is more evenly distributed over the bearing surface of the insulator, and the developed strength of combined fitting and insulator is increased many percent.



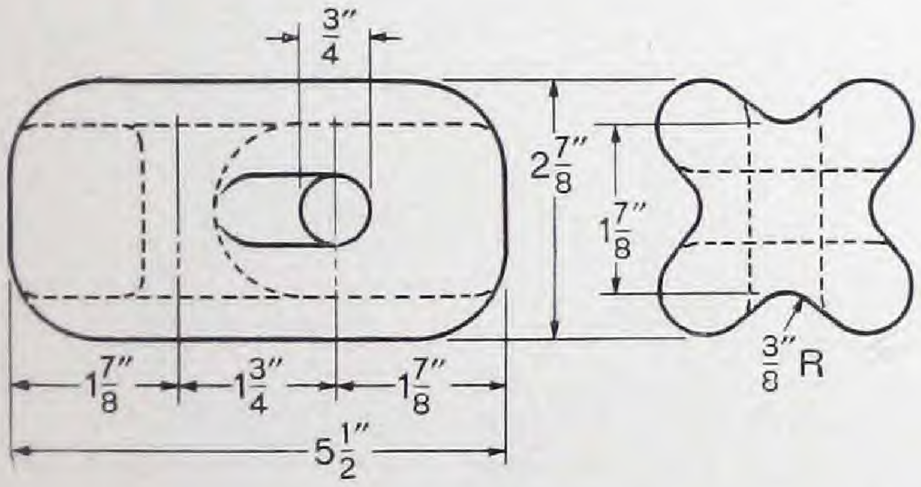
Low-voltage dead-end construction, using an O-B multi-fin strain insulator and a Flashweld fitting.



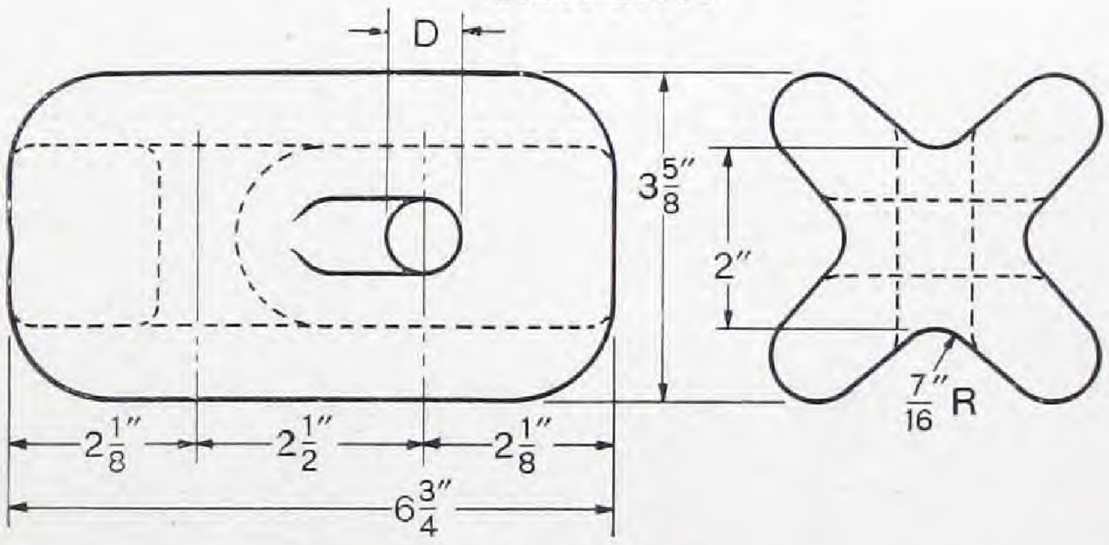
26500



25009-27953



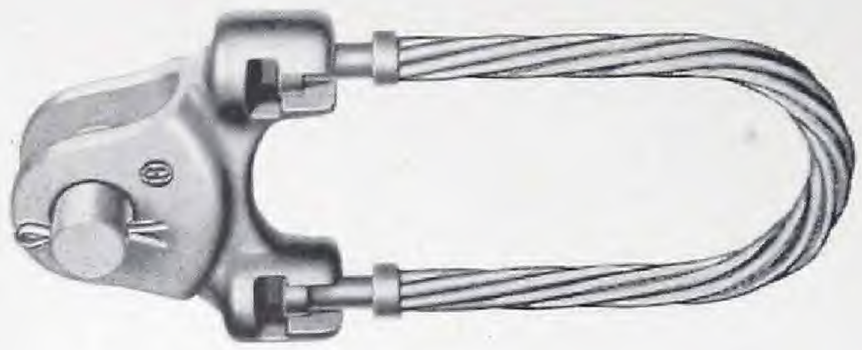
29730



26830-27805

Catalog Number		26500	25009	27953	29730	26830	27805
Code Word		adiab	adicd	adide	adibc	adief	adifg
Dimension D	in.	-----	11/16	7/8	-----	3/4	1
Dimension D	mm.	-----	17	22	-----	19	25
Dry Flashover	kv.	30	35	35	35	40	40
Wet Flashover	kv.	14	18	18	18	21	21
Leakage Distance	in.	1 13/16	2 1/2	2 3/8	2 1/2	3 1/4	2 3/8
Rated Ultimate Strength	lb.	7500	12000	12000	12000	18000	18000
Packed Weight per 100, Domestic	lb.	122	164	151	270	455	430
Packed Weight per 100, Export	lb.	150	193	176	320	500	475
Number in Standard Package, Domestic		50	50	50	25	20	20
Number in Standard Package, Export		100	100	100	50	40	40
Package Size, Export	in.	16x17x18	17x19x20	17x19x20	15x17x19	17x18x23	17x18x23

Strain Insulator Fittings

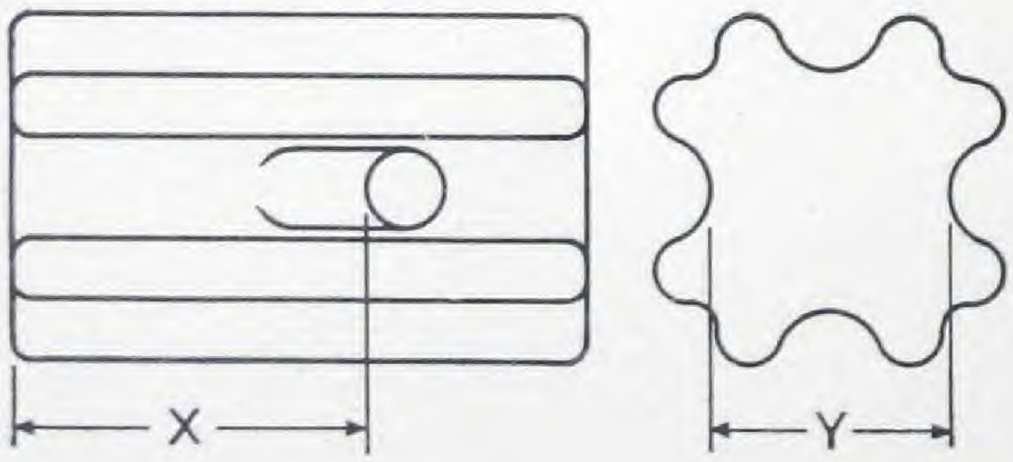


The mechanical strength of any combination of strain insulators and fittings depends upon the fit between the metal parts and the porcelain. For this reason stranded cable is an ideal material for that part of a fitting which is in contact with the porcelain. The development of the Flashweld method of attaching strand to metal has made possible strong fittings which are easily and quickly assembled in the field.

Two sizes of strand, 3/8-inch and 7/16-inch, are provided. The various combinations of strand diameter, kind of strand, length of bail and yoke, and intermediate fittings are shown in the accompanying tables. The proper fittings for use with O-B porcelain strain insulators are recommended below:

Steel Cat. No.	Figure No.	Cu. Weld Cat. No.	Insulator Cat. No.
16665	1	**16666**	**11940**
16729	2	**16730**	**26500**
16733	3	**16734**	
16667	1	**16668**	**31350**
16731	2	**16732**	**26500**
16735	3	**16736**	**25009**
16737	7	**16738**	**27953**
17013	5	**17014**	**25009**
17015	6	**17016**	**27953**
17017	4	**17018**	
16669	4	**16670**	
16683	7	**16684**	**31351**
16845	5	**16846**	**29730**
16849	6	**16850**	
16671	4	**16672**	**31352**
16683	7	**16684**	**26830**
16847	5	**16848**	**27805**
16851	6	**16852**	

How to Determine Proper Fittings to Use with Other Insulators



Add 3/4 inch to the distance from the bearing surface in the hole to the far end of the insulator (X). Select a fitting with dimension (A) equal to or greater than X+3/4 inch. The normal spread of strand should be equal to or greater than (Y).

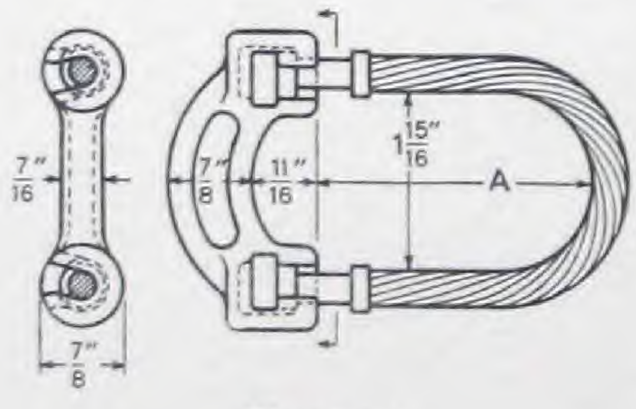


Figure 1

Steel Cable, 3/8-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Wt., Lbs. per 100 Pkd.	Dim. A, Inches	Mech. Str., Lb.
16665	adihj	100	65	83	2 13/16	8000
16667	adiik	100	70	88	3 13/16	8000

Cu. Weld Cable, 3/8-Inch Diameter

16666	adijl	100	65	83	2 13/16	8000
16668	adikm	100	70	88	3 13/16	8000

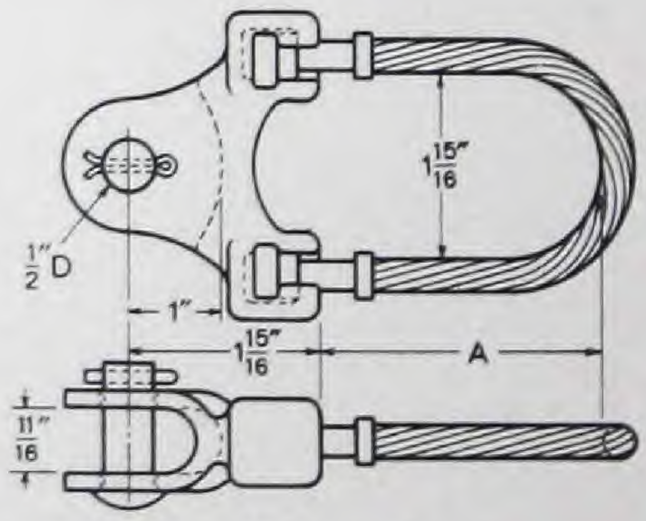


Figure 2

Steel Cable, 3/8-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Wt., Lbs. per 100 Pkd.	Dim. A, Inches	Mech. Str., Lb.
16729	adiln	100	97	115	2 13/16	8000
16731	adimo	100	102	120	3 13/16	8000

Cu. Weld Cable, 3/8-Inch Diameter

16730	adinp	100	97	115	2 13/16	8000
16732	adipr	100	102	120	3 13/16	8000

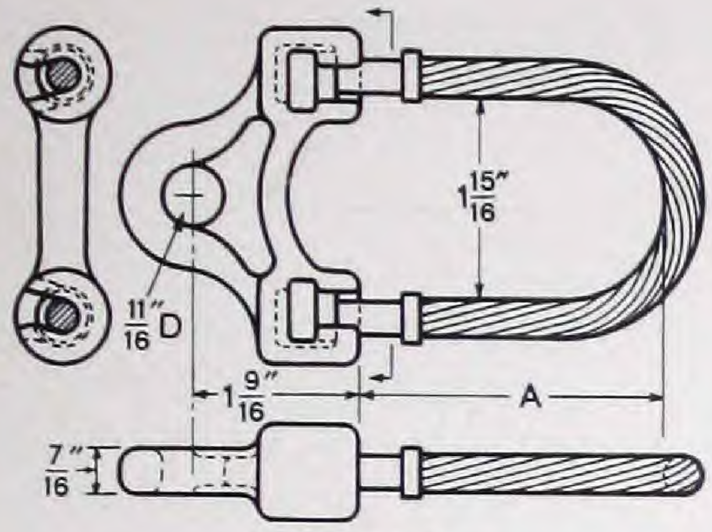


Figure 3

Steel Cable, 3/8-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Pkd.	Dim. A, Inches	Mech. Str., Lb.
16733	adirt	100	74	92	2 13/16	8000
16735	adisu	100	79	97	3 13/16	8000
	Cu. Weld Cable, 3/8-Inch Diameter					
16734	aditv	100	74	92	2 13/16	8000
16736	adiuw	100	79	97	3 13/16	8000

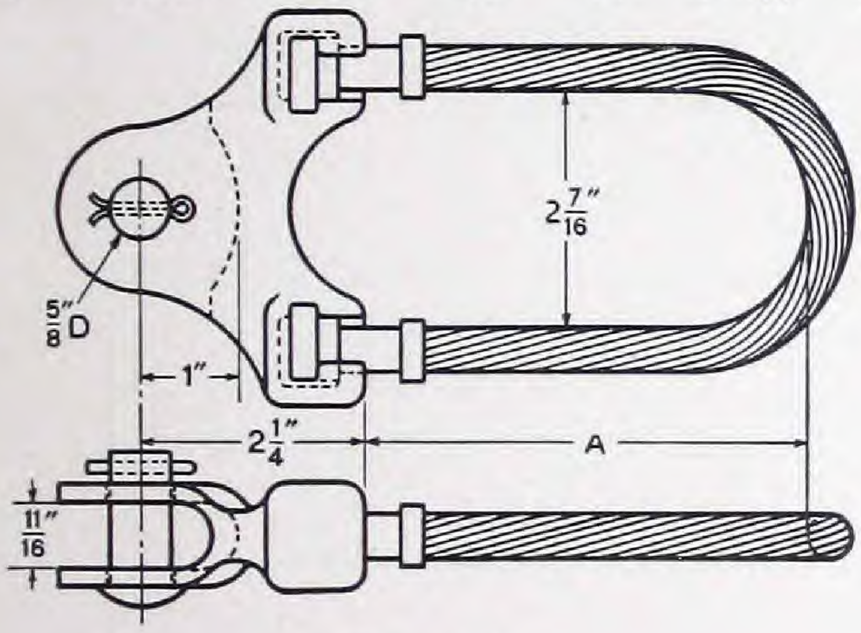


Figure 5

Steel Cable, 7/16-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Pkd.	Dim. A, Inches	Mech. Str., Lb.
16845	adjhi	100	157	177	4½	12000
16847	adjij	100	165	185	5¾	12000
17013	adjno	100	149	169	3¾	12000
	Cu. Weld Cable, 7/16-Inch Diameter					
16846	adjop	100	157	177	4½	12000
16848	adjtu	100	165	185	5¾	12000
17014	adjuv	100	149	169	3¾	12000

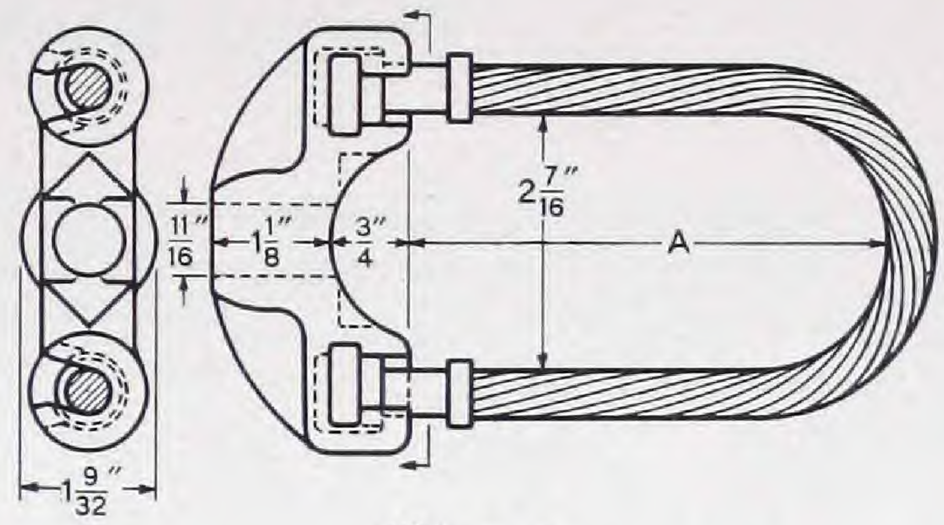


Figure 4

Steel Cable, 7/16-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Pkd.	Dim. A, Inches	Mech. Str., Lb.
16669	adivx	100	127	147	4½	12000
16671	adiwy	100	135	155	5¾	12000
17017	adixz	100	119	139	3¾	12000
	Cu. Weld Cable, 7/16-Inch Diameter					
16670	adiza	100	127	147	4½	12000
16672	adjaa	100	135	155	5¾	12000
17018	adjee	100	119	139	3¾	12000

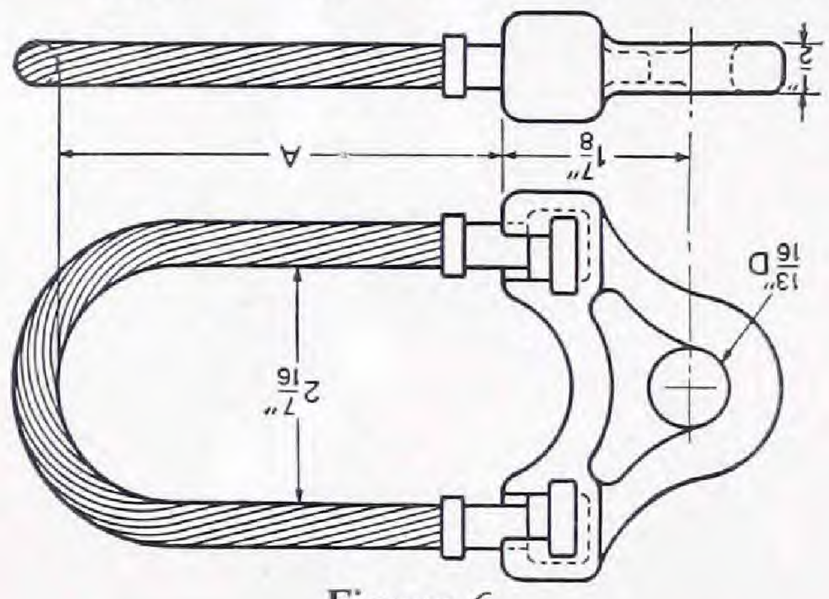


Figure 6

Steel Cable, 7/16-Inch Diameter

Cat. No.	Code Word	Std. Pkg.	Wt., Lbs. per 100 Net	Pkd.	Dim. A, Inches	Mech. Str., Lb.
16849	adkba	100	147	167	4½	12000
16851	adked	100	155	175	5¾	12000
17015	adkfe	100	139	159	3¾	12000
	Cu. Weld Cable, 7/16-Inch Diameter					
16850	adkii	100	147	167	4½	12000
16852	adkoo	100	155	175	5¾	12000
17016	adkuu	100	139	159	3¾	12000

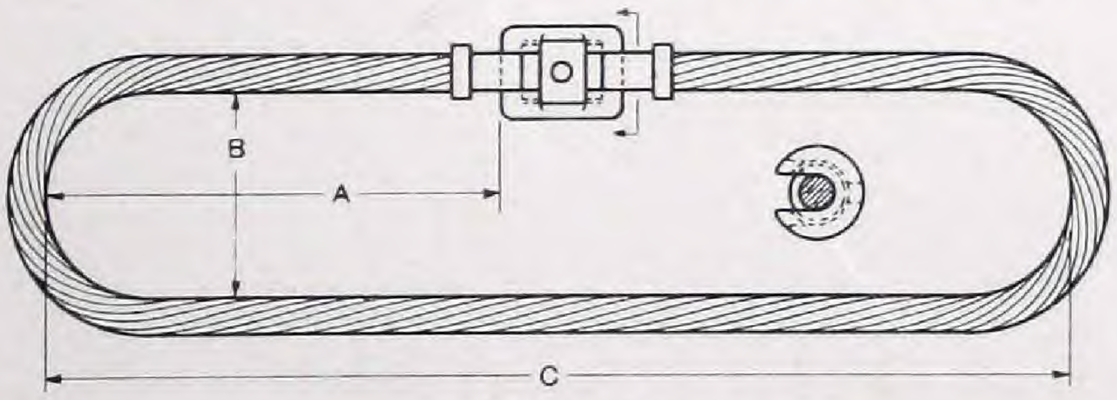
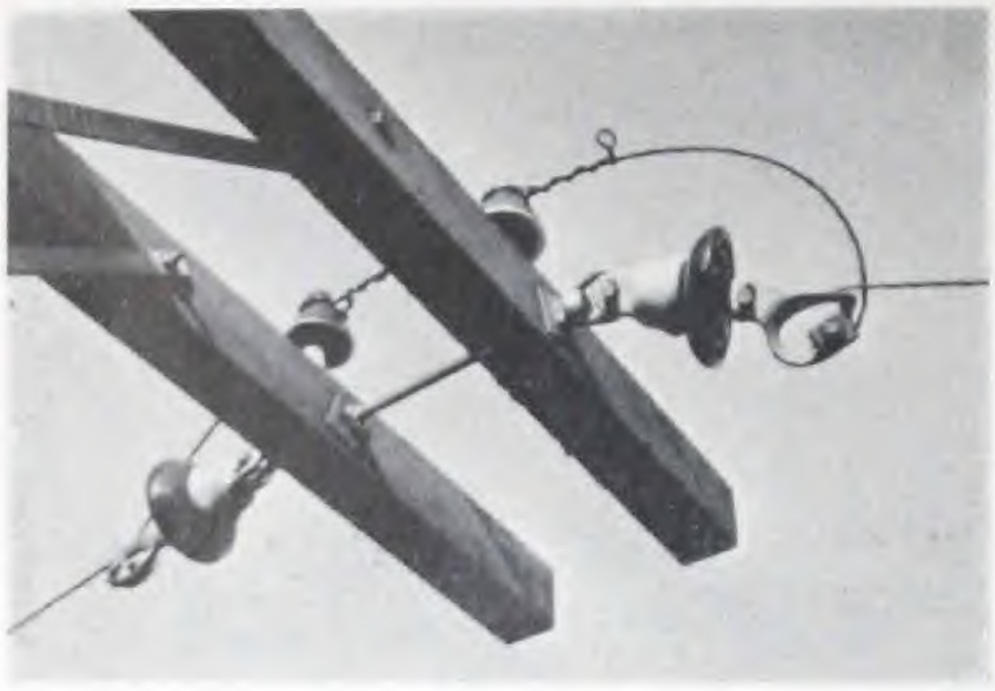


Figure 7

Steel Cable

Cat. No.	Code Word	Std. Pkg.	Wt., Lb. per 100 Net	Pkd.	Dimensions, Inches A	B	C	Diam. Cable, Inches	Mech. Str.,Lb.
16737	adlaz	100	63	83	3 9/16	1 15/16	8½	3/8	8000
16683	adlca	100	128	148	3 5/16	2 3/8	12	7/16	12000
	Cu. Weld Cable								
16738	adlec	100	63	83	3 9/16	1 15/16	8½	3/8	8000
16684	adlih	100	128	148	5 5/16	2 3/8	12	7/16	12000

Baby Universal Clamp

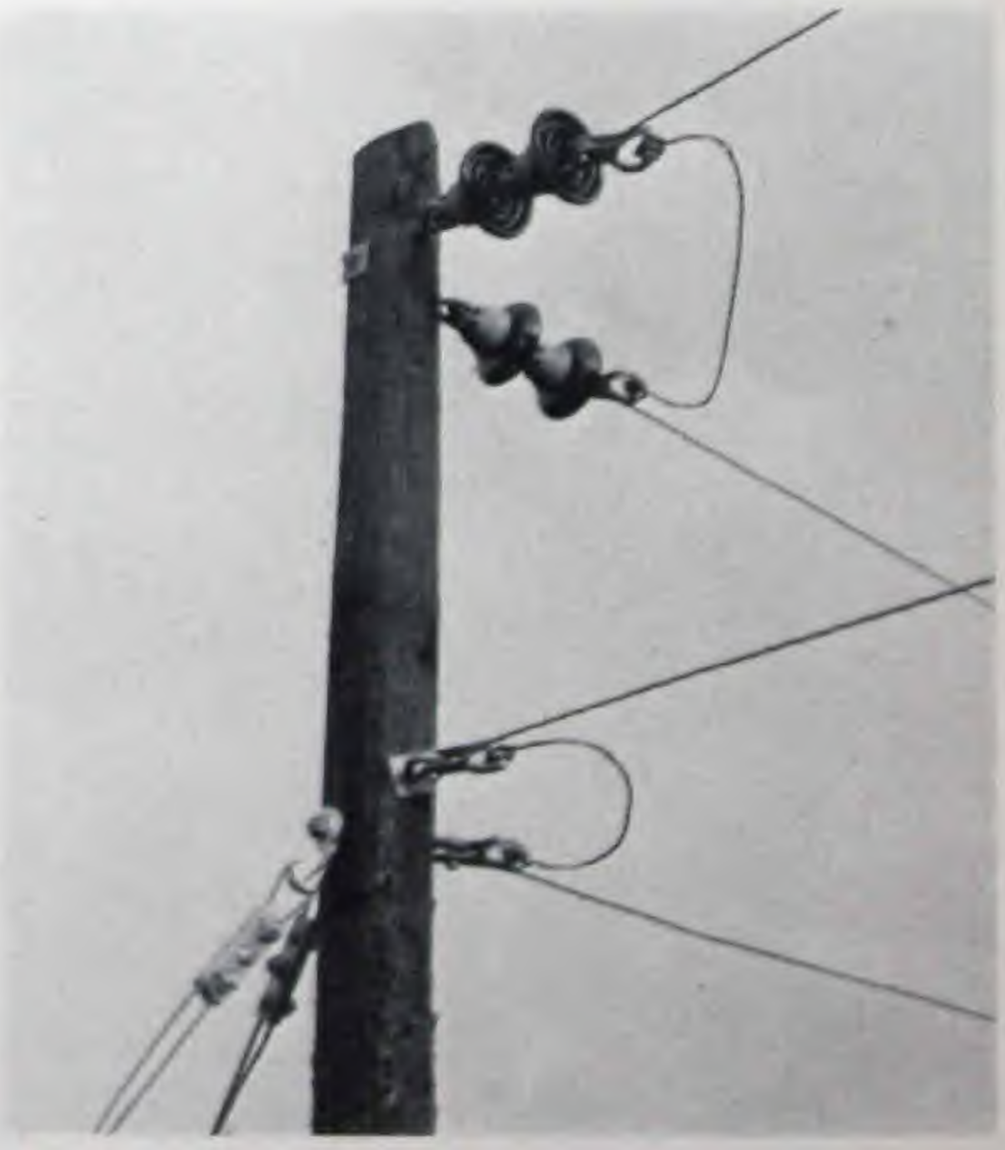


Two Universal Strain Clamps are offered by O-B—the Baby Universal, for 0.145 to 0.350-inch conductors, and the regular Universal (shown on the opposite page), for 0.162 to 0.550-inch conductors. With these two sizes, an economical, efficient clamp is available for any standard conductor in the range indicated.

Provided with a reversible keeper piece, the Baby Universal will take any standard conductors from No. 6 to No. 2 AWG, as well as No. 2-A three-strand Copperweld, and any special ACSR cable up to 0.275-inch diameter, plus ribbon armor. It is an ideal device for dead-ending farm and distribution lines.

Low cost, light weight, high strength and great holding power are its features. Being low in price it is saving many dollars on high-grade, low-cost lines. It weighs slightly more than a pound, and therefore causes no harmful conductor vibration. Though light in weight and small—it fits in the palm of the hand—its body strength allows a liberal factor of safety for even the heavier conductors. Most of the holding power is provided by the snubbing action inherent in the helical shape of the clamp. A modified V groove has a wedging action on the cable which increases the frictional grip between it and the clamp seat.

Cat. No.	Code Word	Diam. of Cable, Inches Min.	Max.	Pkd. Wt. Per 100
80500	angix	0.145	0.350	145 lb.

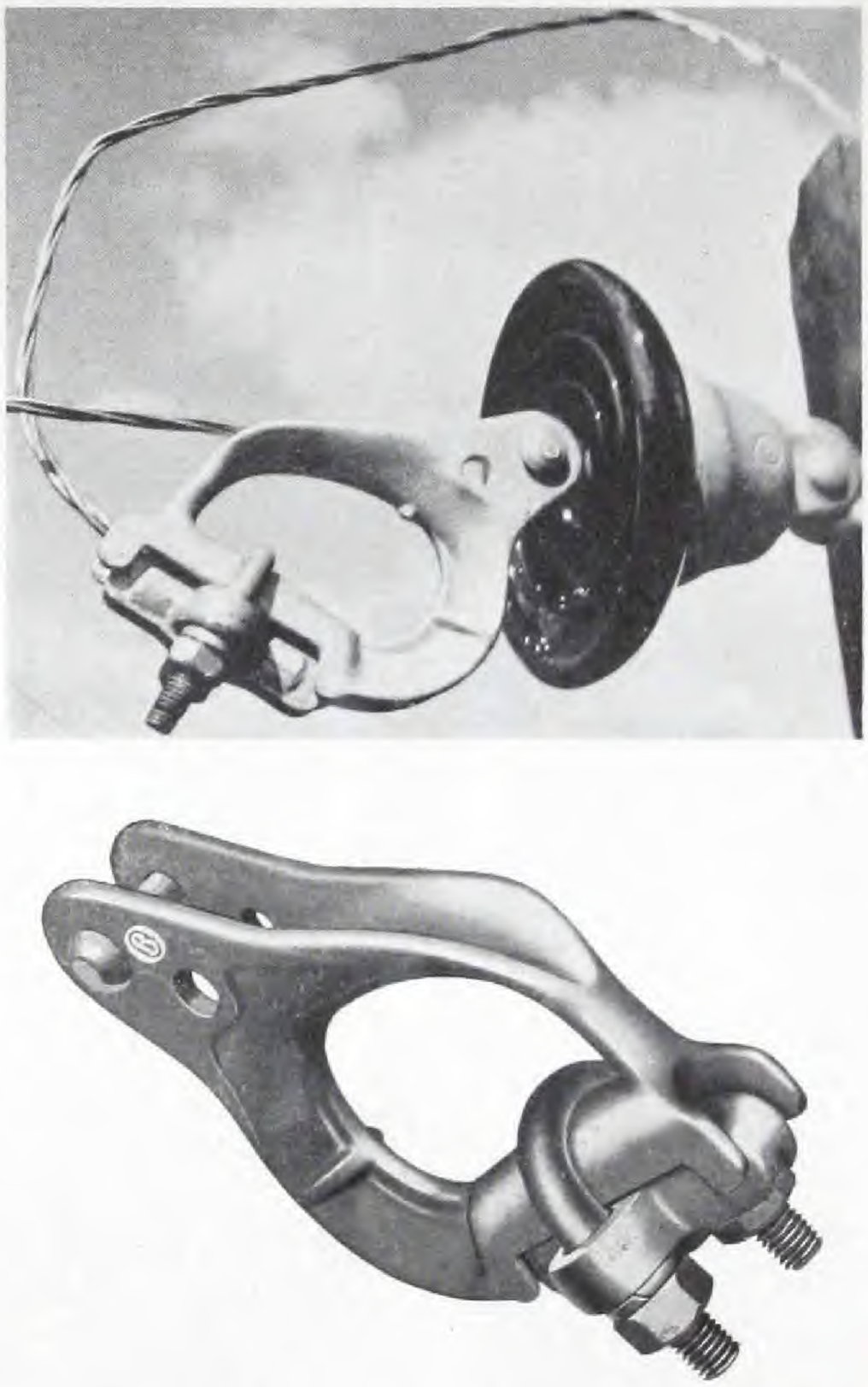


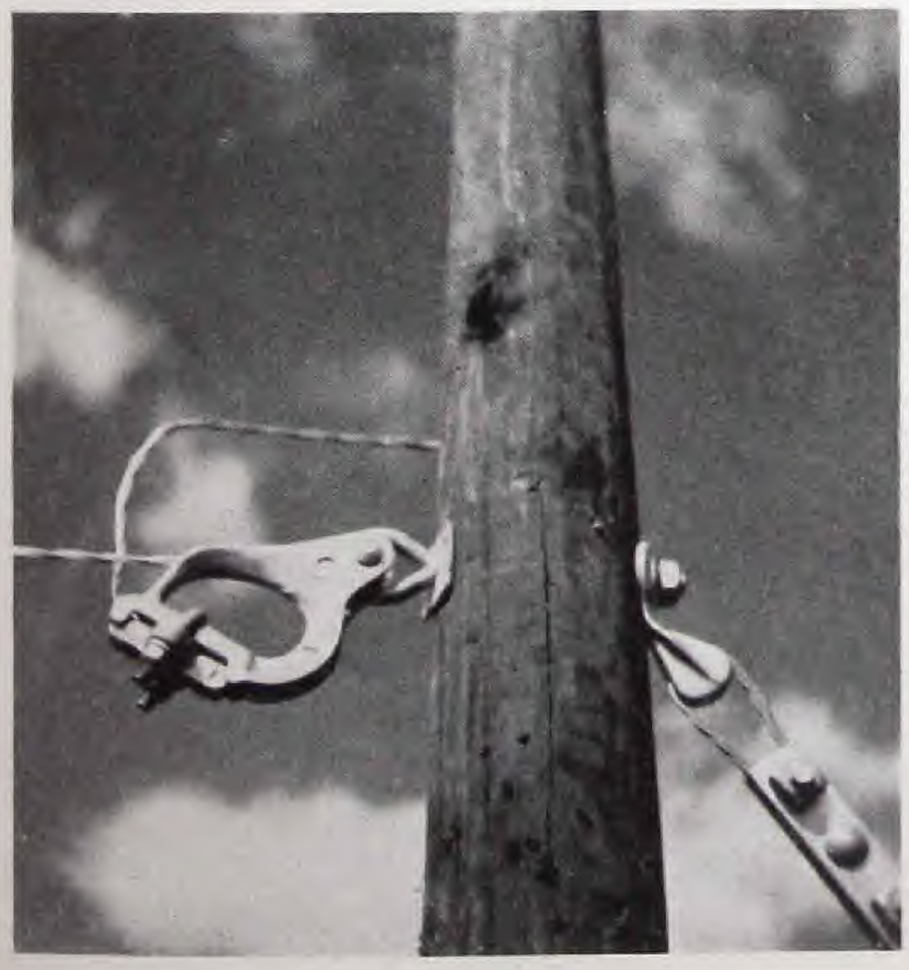
Universal Strain Clamp

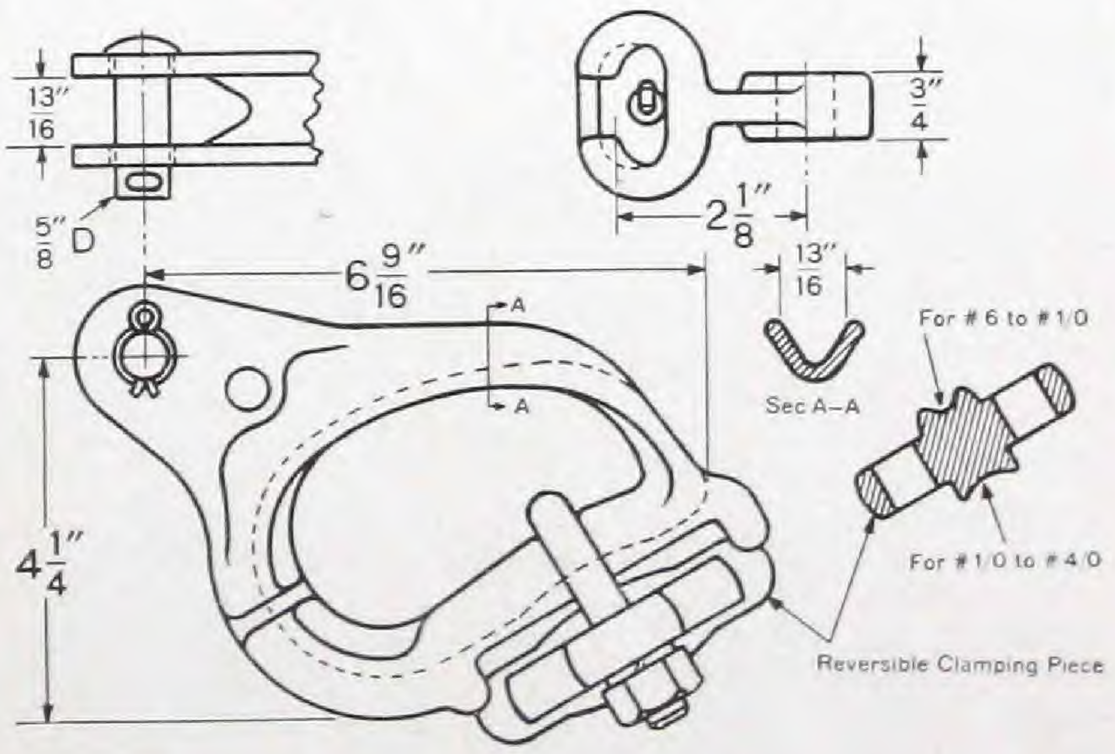
The regular Universal strain clamp, larger of the two Universal designs, is for use on distribution circuits, farm lines, transmission lines, substation buses and overhead ground wires.

It will develop a breaking strength of at least 10,000 lbs. when used with any cable whose ultimate strength is equal to or more than this value. Slip values of 15,000 lbs. or more may be developed on special 3/8-inch steel or copperweld cables. The keeper or clamping member is a U-bolt assembly, capable of holding very heavy conductors. The keeper piece is reversible, one side being applied to smaller conductors and the other to the larger conductors.

As in the Baby Universal, a modified helical seat affords ideal clamping conditions. A majority of the holding power is provided by the snubbing action which is inherent in the helical shape of the clamp. The radius of curvature decreases from the approach to the clamping member. A modified V groove has a moderate wedging action on the cable which increases the frictional grip between it and the clamp seat. The modified helix and the V groove of the Universal design are distinctive O-B features.

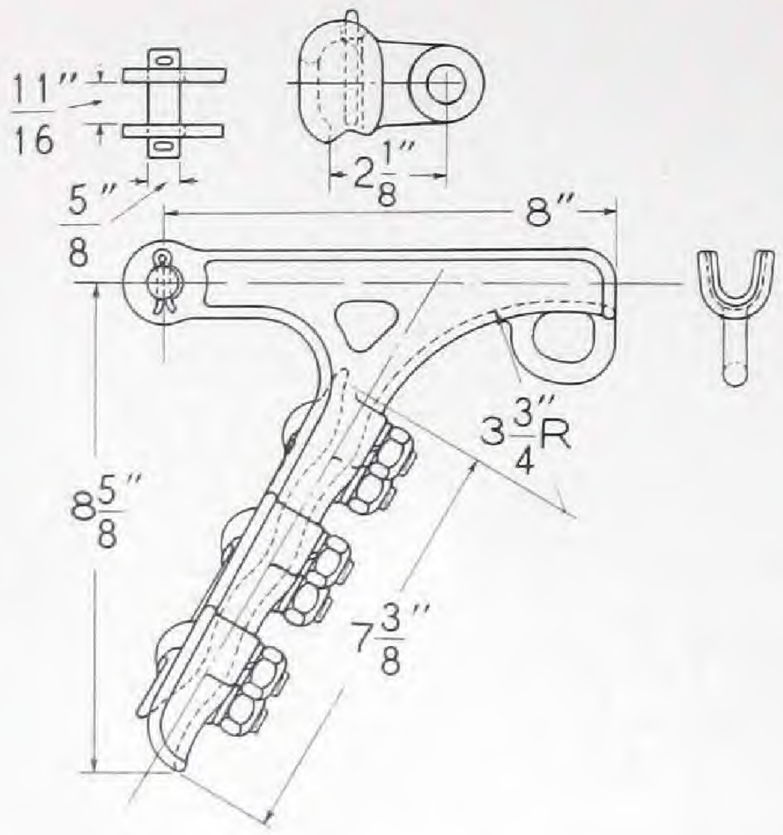






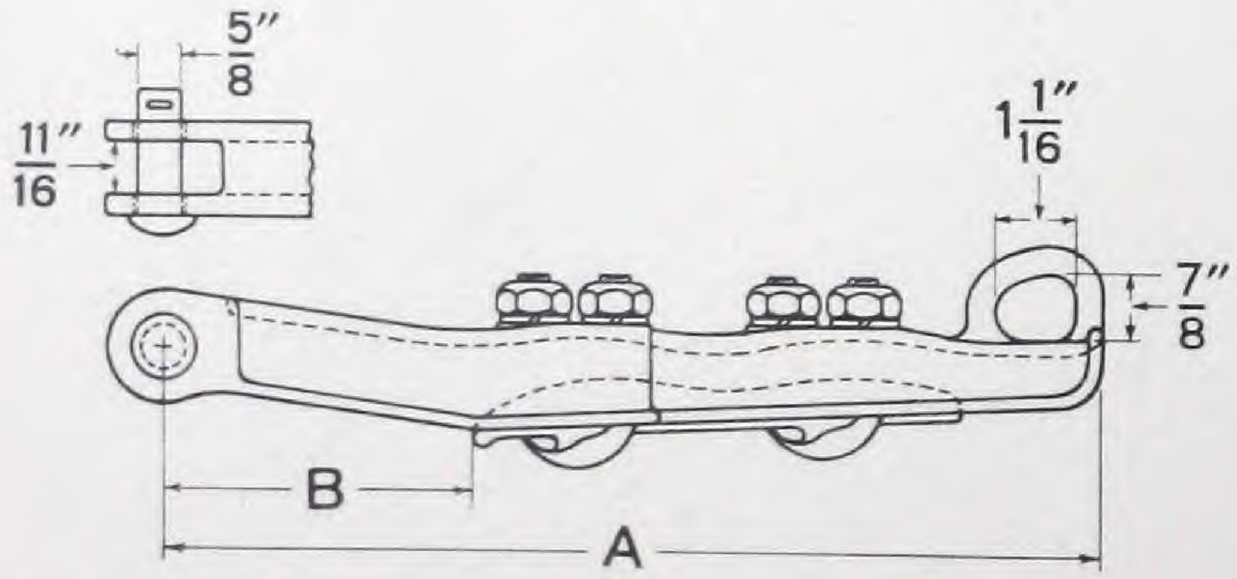
Cat. No.	Code Word	Type of Fitting	Diam. of Cable, Inches Min.	Max.	Packed Wt., Lb. per 100
78500	abixn	None	.162	.550	425
78501	abjaz	Socket	.162	.550	575

Hi-Lite Strain Clamp



Cat. Numbers Without Liners	Cat. Numbers With Liners	Code Word	Type of Fitting	Diameter of Cable, Inches Min.	Diameter of Cable, Inches Max.	Pkd. Wt. per 100, Lb.
80435		angjy	Socket	.400	.550	640
	80436	angma	Socket	.300	.450	640
80437		angoc	None	.400	.550	520
	80438	angqe	None	.300	.450	520

Great holding power and light weight are the two main features of the O-B Hi-Lite strain clamps. Their weight is only about half that of former designs, and this reduction in weight was accomplished without sacrificing mechanical strength. Actually, the ultimate strengths of the new clamps are higher than those of the cables for which they are recommended. The effective curved snub approach and the waved seat of the older designs are retained. Clamp bodies, keepers and fittings are of corrosion-resistant O-B Flecto malleable iron. Bolts and cotters are steel. All ferrous parts are hot-dip galvanized. Clamping pieces are made so they can be installed only in the correct position. Although only one size is shown, Hi-Lite strain clamps are available in several sizes, permitting good clamping action with any size of conductor.



Cat. No.	Code Word	Type of Fitting	Dimensions, Inches A	Dimensions, Inches B	Diameter of Cable, Inches Min.	Diameter of Cable, Inches Max.	Pkd. Wt. Per 100, Lb.
80900	anjob	None	9 1/4	2 3/4	.280	.430	290
80901	anjpa	Socket	9 1/4	2 3/4	.280	.430	500
80902	anjte	Clevis	9 1/4	2 3/4	.280	.430	470
80905	anjuf	None	10 3/4	3 9/16	.420	.550	475
80906	anjxi	Socket	10 3/4	3 9/16	.420	.550	685
80907	anjyj	Clevis	10 3/4	3 9/16	.420	.550	655
80910	ankak	None	12 1/2	4 1/8	.540	.680	575
80911	ankeo	Socket	12 1/2	4 1/8	.540	.680	785
80912	ankit	Clevis	12 1/2	4 1/8	.540	.680	755

Strateline Clamp

Strateline clamps are for station dead-ending or for line use where this type of clamp is preferred. They are light in weight but develop slip strengths of 50 percent of the ultimate strength of hard drawn copper conductors. The long socket eye and clevis provide clearance for the jumper when used as a line strain clamp. The eye at the clamp end makes hot-line changes easier and safer.

Clamp surfaces are well-rounded and free from sharp point surfaces which might induce flashover or radio interference. Strateline clamps are available in three sizes, and they can be furnished with a socket eye, a clevis, or no fitting.

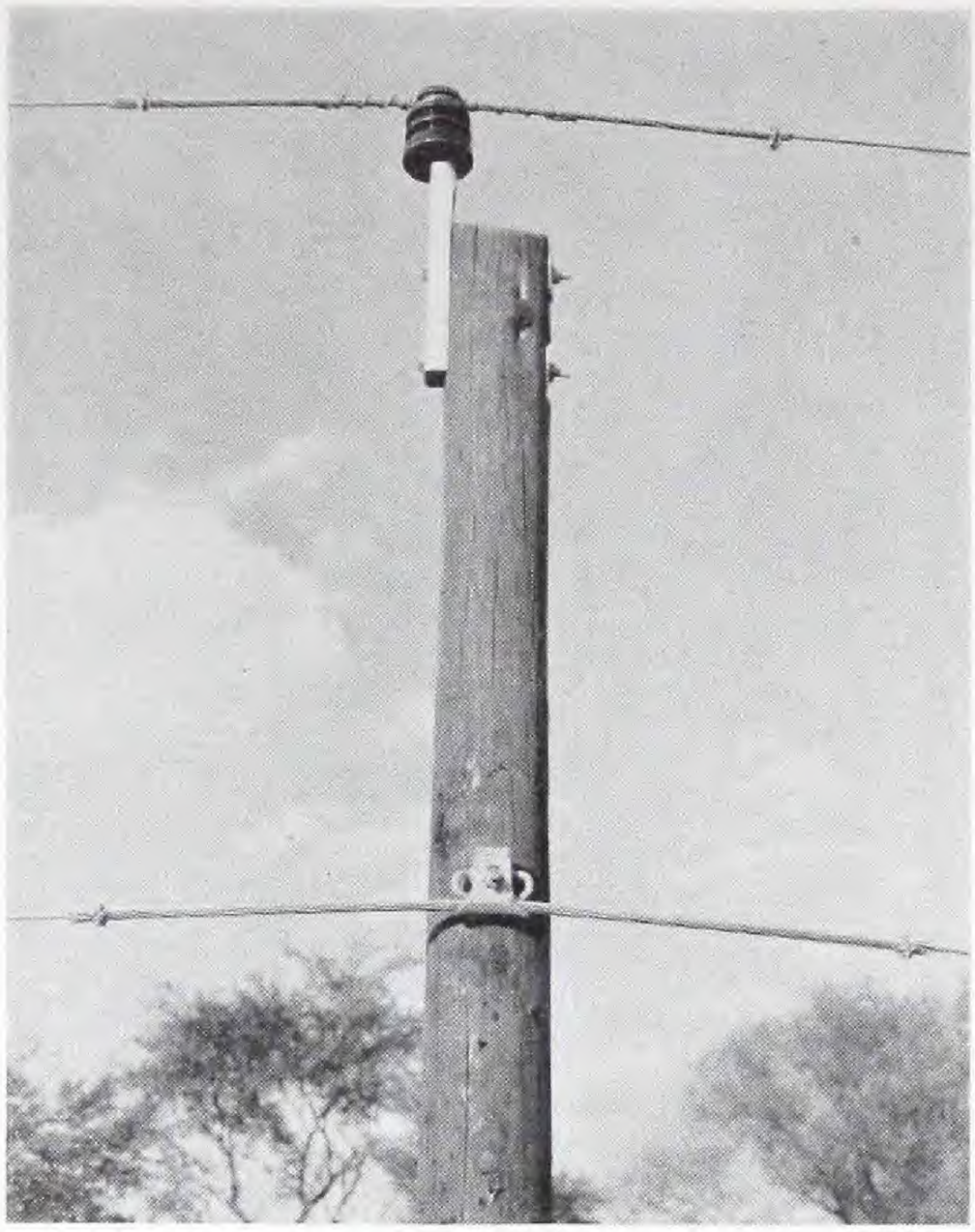
Neutral Clamp

Designed for use on distribution and farm lines, the O-B neutral clamp provides an economical and simple means for grounding the neutral conductor on primary and secondary systems. Having a seat for holding the neutral conductor, an eye on each side for dead-ending service wires, and a groove on the upper edge of the keeper piece for a ground wire or neutral secondary service wire, it will accommodate any or all of these wires without any auxiliary equipment. Eliminating the spools, pole bands, solderless connectors and other equipment normally used for these combinations, the neutral clamp effects a substantial saving. Good practice calls for a ground of the neutral conductor at every pole. With the neutral clamp the higher efficiency of frequent grounds can be obtained at no additional cost.

An outstanding feature of this device is that it stays tight regardless of how much the pole shrinks. The portion of the main clamp casting through which the bolt passes is threaded, so the main casting can't back away from the clamping pressure of the end nut. Thus the neutral wire is always tight.

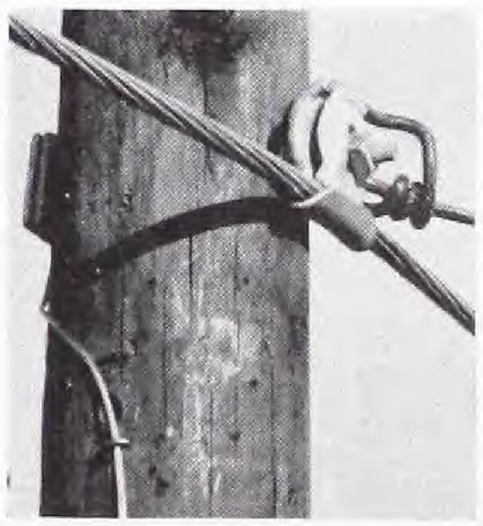
Clamping pressure is exerted on the cable by vertical movement of the keeper piece resulting from horizontal pressure on the inclined surface adjacent to the cable seat. The cable seat underneath the clamping member is straight, but a liberal radius nose at each end provides for total vertical angles up to 30 degrees.

The O-B neutral clamp is an ideal clamp for use with all forms of stranded cable and ACSR with armor rods, but it is not recommended for use with solid conductors unless these conductors are protected with armor rods or similar materials. It accommodates neutral conductors ranging in size from 0.25 in. (6A Copperweld) to 0.60 in. (No. 2 ACSR with armor rods).

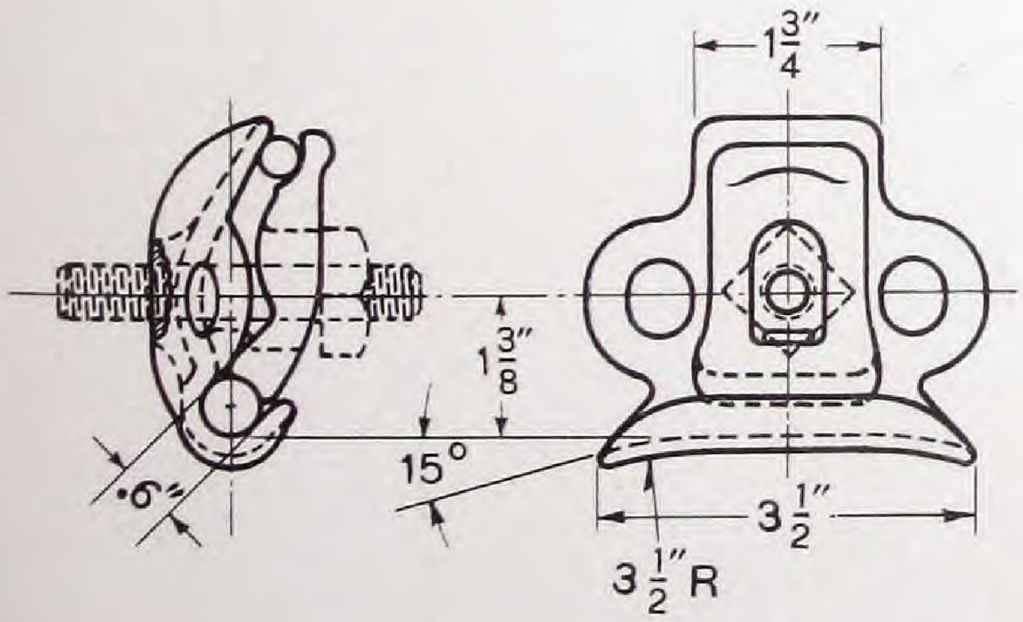


The neutral clamp with neutral conductor only, . .

. . the neutral conductor and a ground wire, or . .

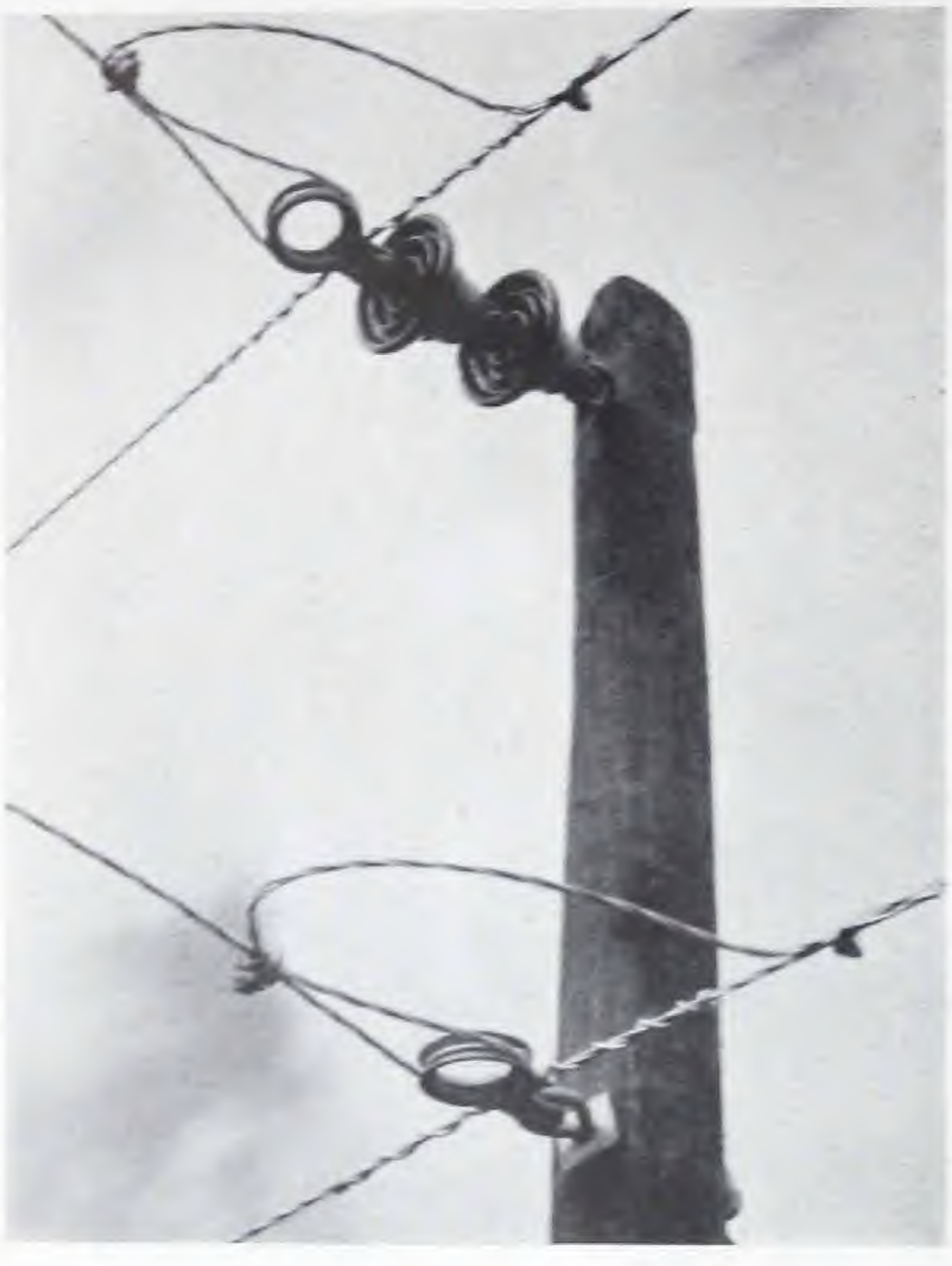


. . the neutral conductor, service and ground wires.

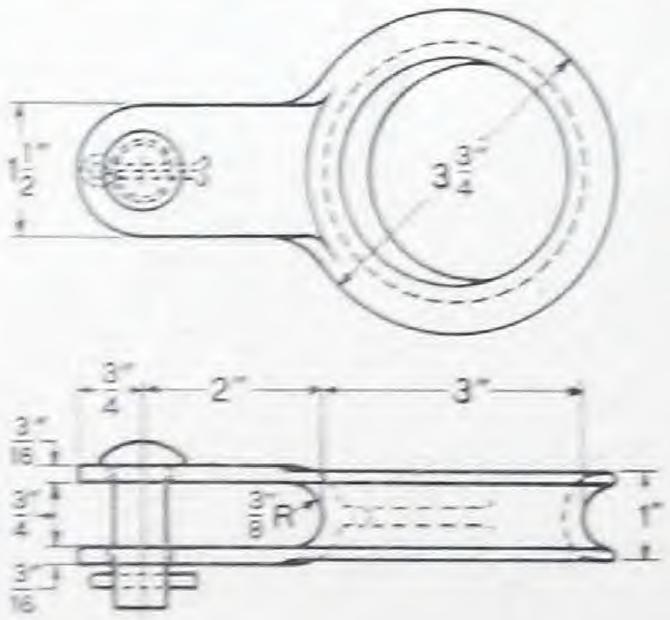


Cat. No.	Code Word	Description	Pkd. Wt. per 100
81000	apvsu	Tapped for ⅝-inch bolt	50 lb.
81005	apvuw	Tapped for ½-inch bolt	50 lb.

Dead-End Thimble



The O-B Dead-End Thimble offers an improved method of dead-ending conductors. In place of dead-ending a conductor directly into the eye or clevis of a suspension insulator, the thimble is attached to the insulator and the conductor is dead-ended about the thimble. This construction permits the replacement of an insulator without cutting the jumper and making a new dead-end, resulting in an appreciable saving. Used either with a suspension or strain insulator the thimble makes hot-line maintenance easier.

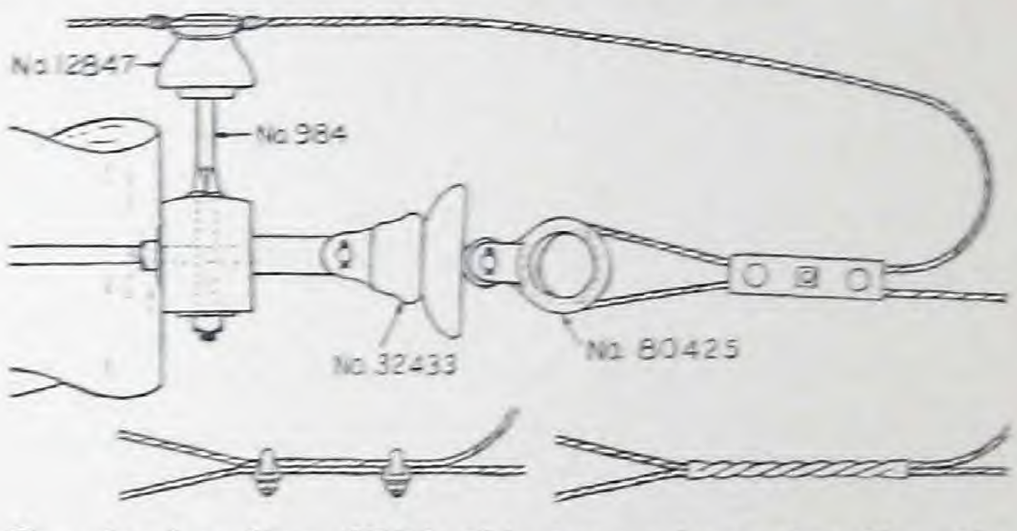


Cat. No.	Code Word	Pkd. Wt. per 100
80425	anges	130 lb.

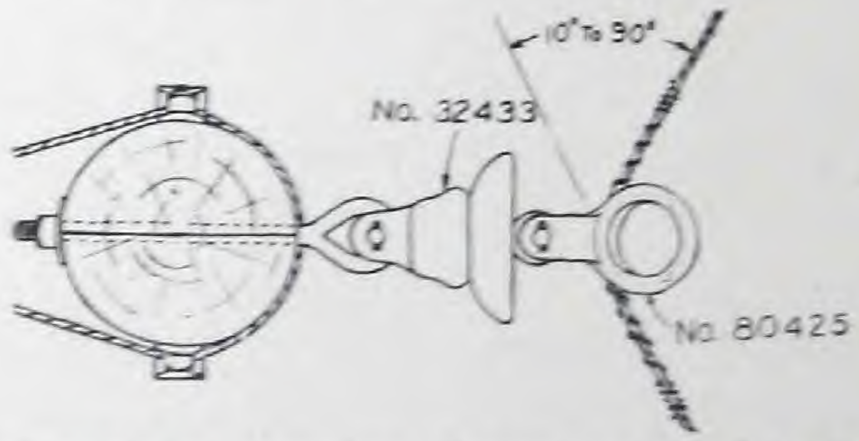
Recommended Conductor Sizes

Copper (Solid)	Nos. 8, 6, 4 and 2
Copper (Stranded)	Nos. 8, 6, 4, 2, 1/0 and 2/0
Copperweld (Solid)	Nos. 10, 8, 6, 4 and 2
Copperweld (3-Strand)	Nos. 6A, 5A, 4A, 3A, 2A, 3 No. 10's, 3 No. 9's, 3 No. 8's, 3 No. 7's and 3 No. 6's
Copperweld (7-Strand)	5/16, 11/32 and 3/8 inch
Galvanized Strand	1/4, 5/16 and 3/8 inch
ACSR (With Ribbon Armor)	(Two turns on thimble) Nos. 8, 6, 4 and 3
ACSR (With Ribbon Armor)	(One turn on thimble) Nos. 2, 1/0 and 2/0

Three Uses of the Dead-End Thimble

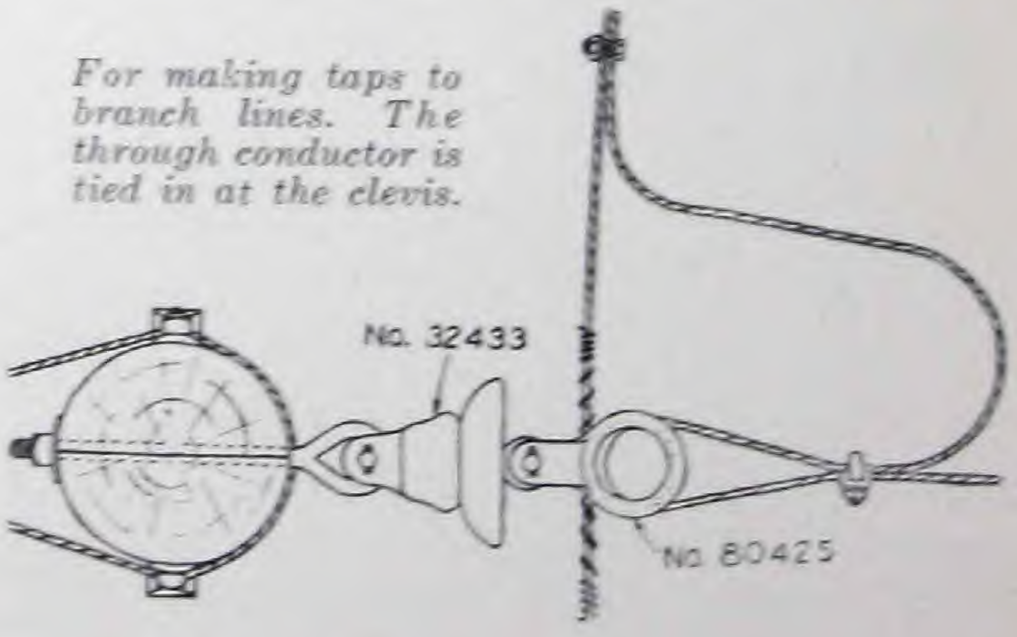


For dead-ending. With this type of construction the suspension insulator can be replaced without cutting the jumper and making a new dead-end.



For angle construction. Tie wire is used instead of usual clamping practice.

For making taps to branch lines. The through conductor is tied in at the clevis.

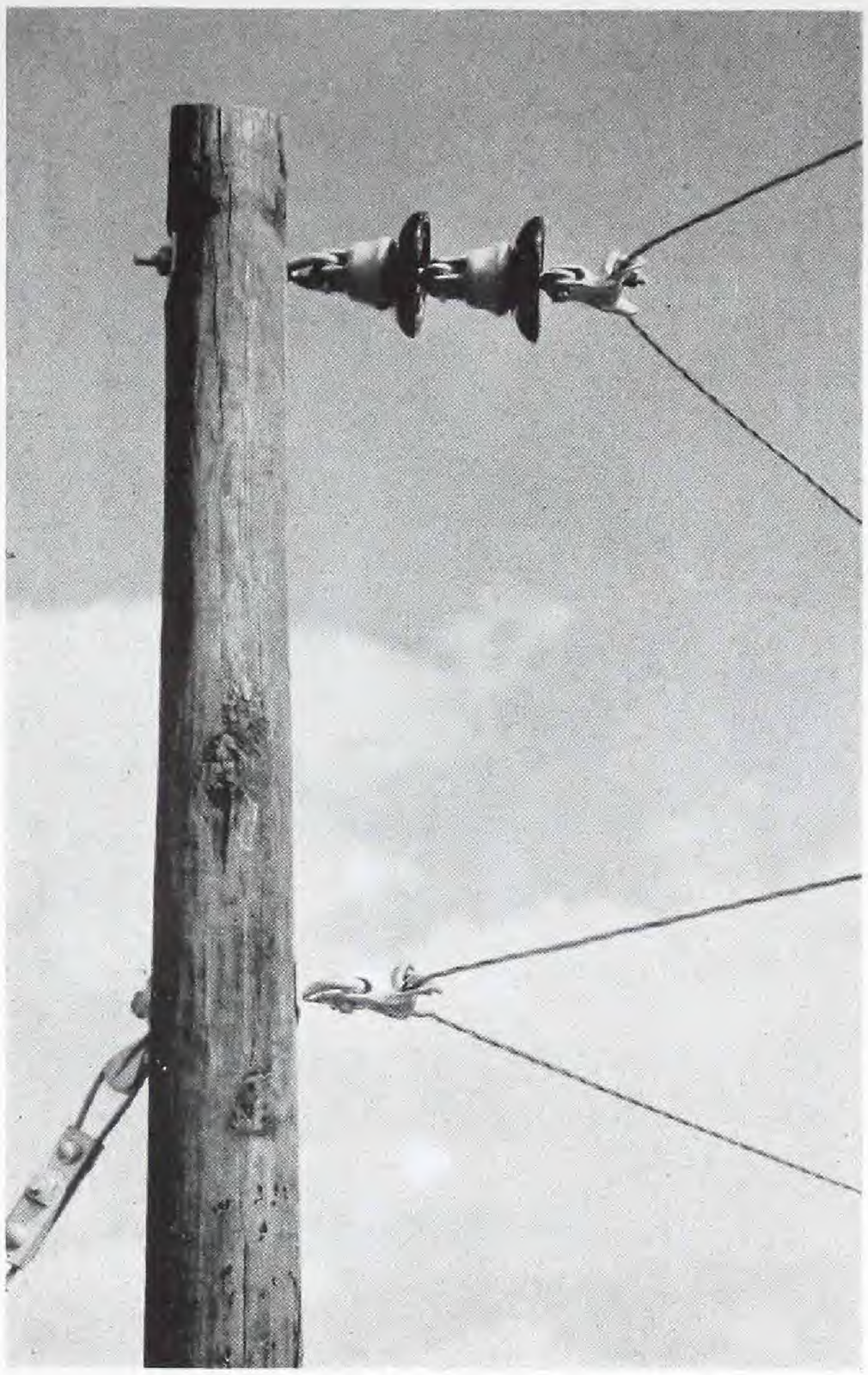


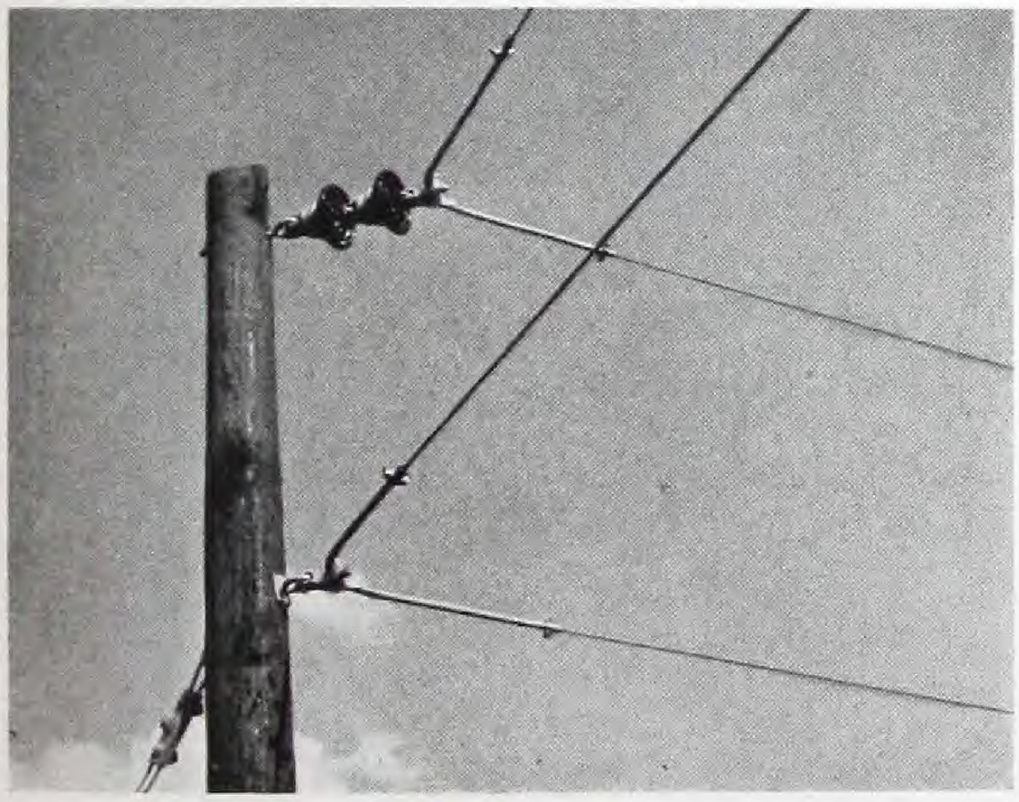
Angle Clamp

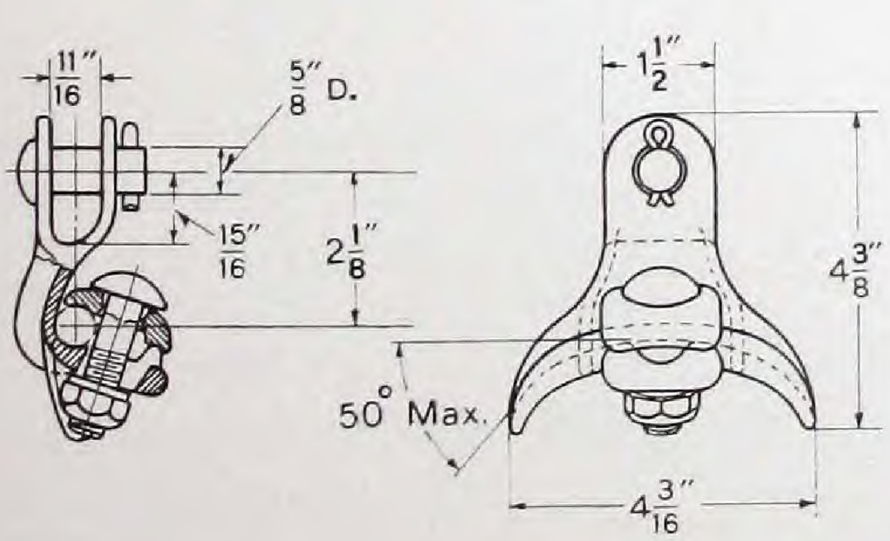
Being extremely easy to install and permitting angles from 10 to 120 degrees to be turned without the necessity of dead-ending the conductors and using jumpers, the improved O-B angle clamp is a big time and money saver. Actually, angles in distribution and farm lines can be turned with 50 percent less material and labor by this device.

Possessing the features of an open seat clamp, it is in effect a one-piece assembly, and no parts need be removed for attaching the conductor. With the conductor laid in the seat of the clamp, it is gripped by merely tightening the nut on the bolt which holds the keeper piece on the conductor and main body casting. A lock washer prevents the nut from loosening in service.

The keeper piece is reversible, having two







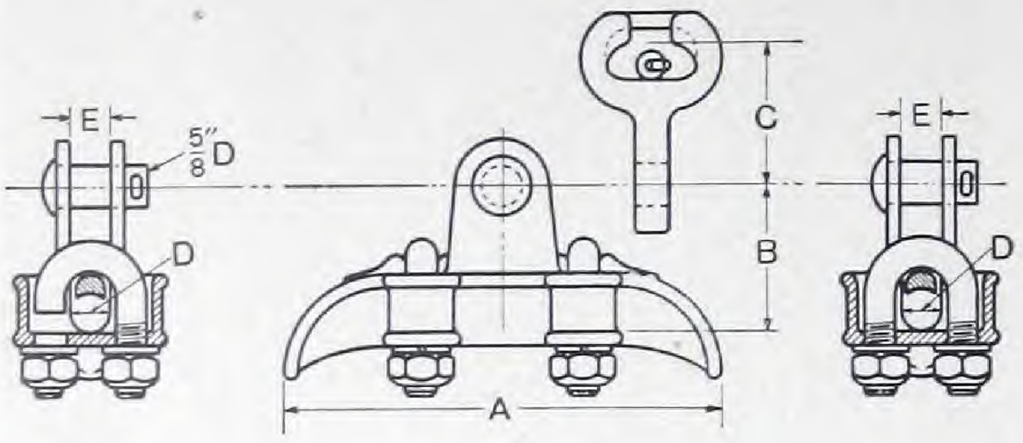
Cat. No.	Code Word	Pkd. Wt. Per 100
81460	aqawu	162 lb.

sizes of conductor grooves, and will accommodate all commercial sizes of conductors from No. 6 AWG to No. 2 ACSR with armor rod (0.162 to 0.600 inch). The radius of curvature of the clamp seat is 3 inches which meets the requirements of any copper, aluminum or steel conductor in this range.

Provided with a pin through the clevis-shaped upper part of the casting, the clamp is easy to attach or remove. It can be attached to an eye, clevis or hook-type suspension insulator without any intermediate fittings. Use of this pin also makes it possible to remove the clamp conveniently from an insulator with hot-line tools.

The clamp body and keeper piece are made of O-B Flecto malleable iron, hot-dip galvanized. While light in weight the clamp has ample strength for conductor tensions in excess of 5,000 lbs., even under full ice, wind and temperature loadings.

Light Weight Suspension Clamps



O-B suspension clamps are light in weight and therefore have small inertia, a desirable feature from the standpoint of conductor vibration. The clamp seats are rounded and curved, and the keeper piece is so shaped that there is a constantly increasing pressure exerted on the cable from the entering point to the clamp center.

CATALOG NUMBERS AND CODE WORDS

WITHOUT LINERS				WITH LINERS				Type of Fitting	*Cable Seat Diam. D	Dimensions, Inches			
J Bolt		U Bolt		J Bolt		U Bolt				A	B	C	E
78310	arcro	81725	ardaw	*78311	arcur	*81726	ardcy	None	.46	5¾	2⅛	.....	.56
78312	arcxu	81727	ardfa	*78313	arcyv	*81728	ardie	Socket	.46	5¾	2⅛	2⅛	.56
78314	ardmi	78318	areav	*78315	ardok	*78319	arebw	None	.60	6¾	2¼	.....	.60
78316	ardso	78320	arecx	*78317	ardyu	*78321	aredy	Socket	.60	6¾	2¼	2⅛	.60
81150	areez	81154	areje	*81151	aregb	*81155	arekf	None	.70	7⅛	2¼	.....	.70
81152	arehc	81156	arelg	*81153	areid	*81157	aremh	Socket	.70	7⅛	2¼	2⅛	.70
78322	areni	78326	aresn	*78323	areoj	*78327	areto	None	.80	7½	2⅜	.....	.80
78324	arepk	78328	areup	*78325	arerm	*78329	arewr	Socket	.80	7½	2⅜	2⅛	.80

*When clamps are furnished with liner, deduct 0.1 inch from cable seat diameter shown under column D.

Suspension Insulator Fittings

In addition to the clevis eyes, socket eyes, ball clevises, socket clevises, hooks and thimble clevises shown on this and the following page, O-B offers ball eyes, chain shackles, anchor shackles, clevis clevises, strap clevises and link fittings. With these comparatively few devices it is possible to attach an insulator with socket or clevis cap to any type of support, and to attach any form of suspension or strain clamp to an insulator with a ball, clevis or ring-type pin. All O-B suspension insulator fittings are made of either high-grade Flecto malleable iron or steel forgings.

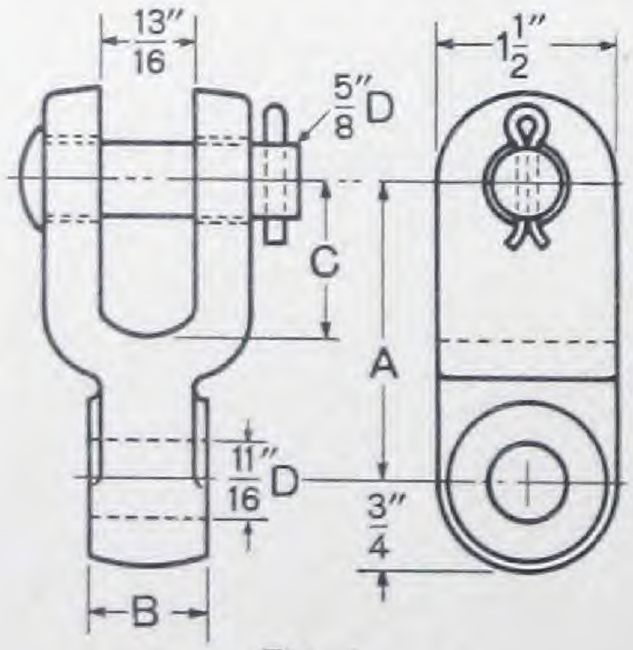


Fig. 1

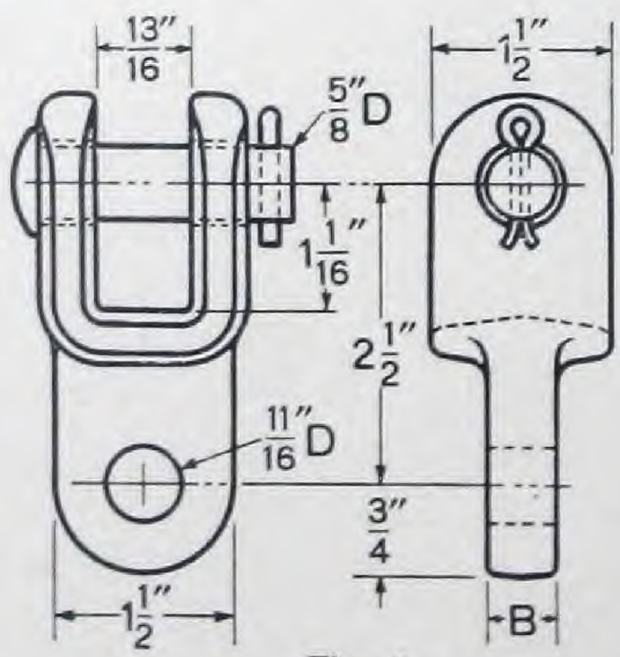


Fig. 2

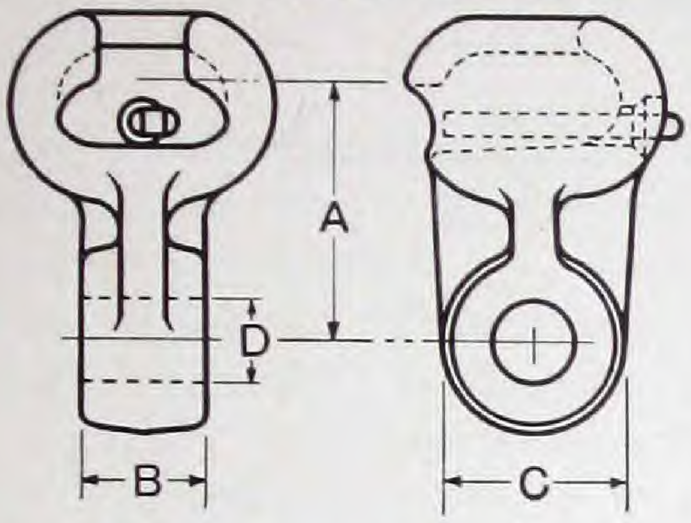
CLEVIS EYES

Used to connect suspension clamps to clevis-type insulators and for other similar purposes. Catalog data for Figure 1 appears in the left column; that for Figure 2 appears in the right column.

Cat. No.	Code Word	Dimensions, Inches A	B	C	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
79275	abmaw	2 9/16	½	1 1/16	20000	115
70699	abmcy	2 9/16	19/32	1 1/16	20000	120
79085	abmfa	2⅝	⅞	1 1/16	25000	130

Cat. No.	Code Word	Dimension B, Inches	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
77939	abnid	½	20000	115
74587	abnje	19/32	20000	120

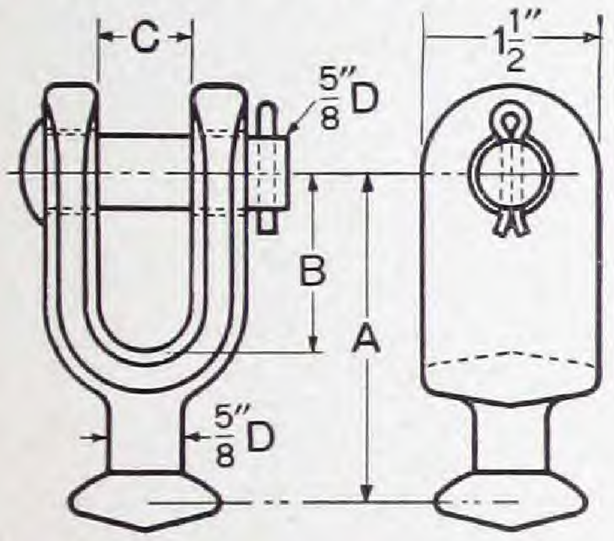
SOCKET EYES



For use with suspension and strain clamps.

Cat. No.	Code Word	Dimensions, Inches A	B	C	D	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
78721	abkqo	2 1/8	1/2	1 1/2	11/16	16000	111
74593	abkus	2 1/8	5/8	1 1/2	11/16	18000	120
78728	abkwu	2 1/8	3/4	1 1/2	11/16	18000	126

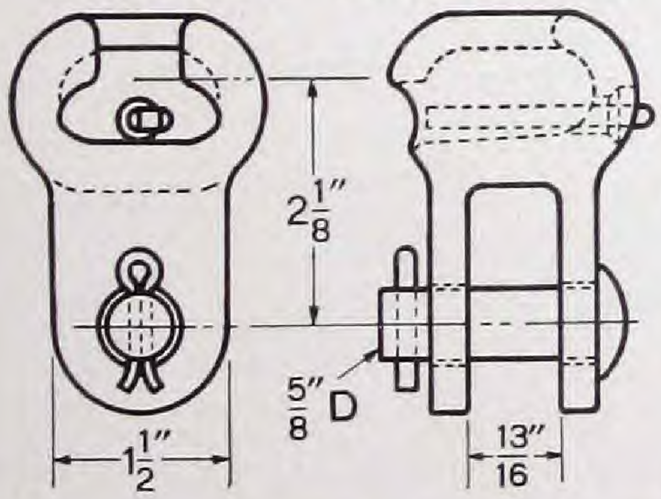
BALL CLEVISES



Used for attaching suspension insulators to supporting structures. These fittings also are convenient for connecting ball and socket fittings with those of the clevis type.

Cat. No.	Code Word	Dimensions, Inches A	B	C	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
70689	abkig	2 3/4	1 9/16	13/16	20000	125
70488	abkki	3 3/4	2 9/16	13/16	20000	150

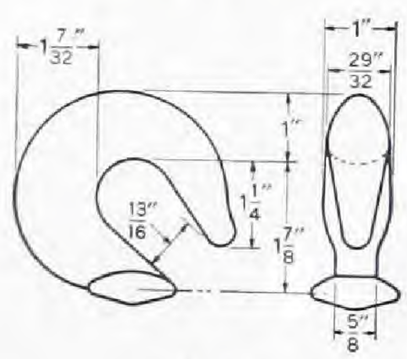
SOCKET CLEVISES



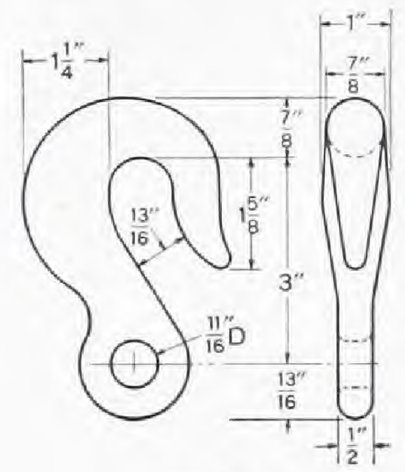
Used to connect ball fittings and those with drilled tongues or eyes.

Cat. No.	Code Word	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
11545	abonh	15000	150

HOOKS



78420

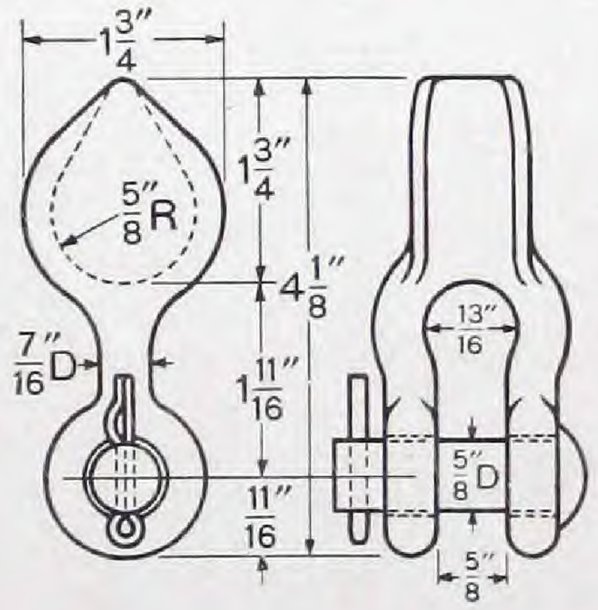


79270

Used for attaching suspension insulators to supporting structures.

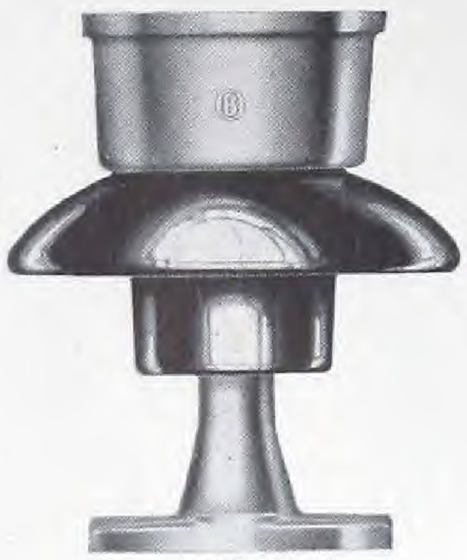
Cat. No.	Code Word	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
78420	abjvu	20000	120
79270	abkda	18000	120

PEIRCE THIMBLE CLEVISES



Cat. No.	Code Word	Peirce No.	Ultimate Strength, Lb.	Packed Wt., Lb. per 100
79276	abojd	655	20000	111

Switch and Bus Insulators

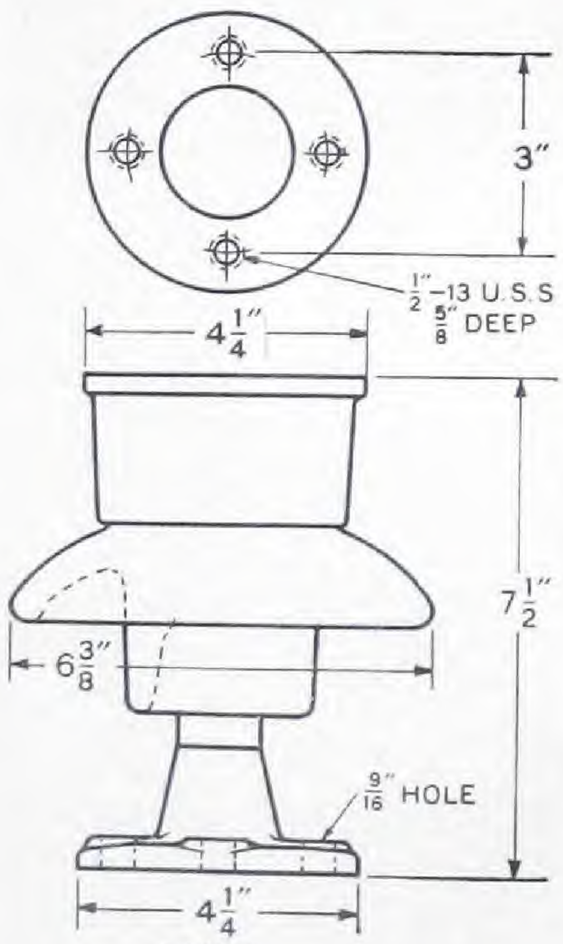


31300

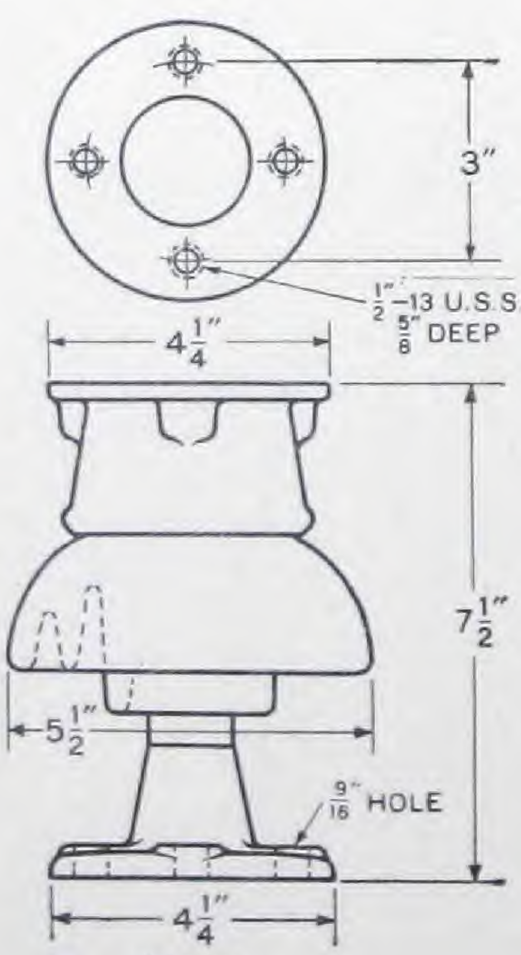
Each individual part of an O-B switch and bus insulator is designed and assembled to perform without electrical or mechanical fatigue. The essential dimensions and alignment, to insure complete interchangeability with other insulators or switch parts, are assured by the extremely high degree of refinement obtainable with jigs of special design. Maximum electrical efficiency is obtained through the proper ratio of metal to porcelain, shape of porcelain and contour of metal parts. They possess great strength, but also have the necessary resiliency in the joints and metal parts to prevent harmful thermal stresses. Many sizes are available.

Catalog Number		*31300	28193	*31301	27317
Code Word, Single Unit		abtuj	abtyn	abtzo	abubp
Voltage Rating		7500	7500-s	15000	15000-s
Dry Flashover	kv.	60	60	85	85
Wet Flashover	kv.	35	35	50	50
Leakage Distance	in.	7	8¾	11⅝	11⅝
Dry Arcing Distance	in.	5	4⅝	6¾	6¾
Wet Arcing Distance	in.	2½	1⅞	3¾	3¾
Bending Strength, Base Mounted	lb.	2000	2000	1500	1500
Bending Strength, Cap Mounted	lb.	1000	1000	1000	900
Tension Strength	lb.	5000	5000	5000	5000
Torsion Strength	in.–lb.	6000	6000	7000	7000
Net Weight per Unit	lb.	10	9¾	14	14½
Packed Wt. per Unit, Domestic	lb.	13½	12	19¾	20¼
Packed Wt. per Unit, Export	lb.	13½	12	19¾	20¼
Stand. Pkg., Dom., Units per Crate		9	12	3	3
Stand. Pkg., Export, Units per Crate		9	12	3	3
Volume of Crate, Export	in.	9x23x26	9x26x21	11x11x25	12x11x23

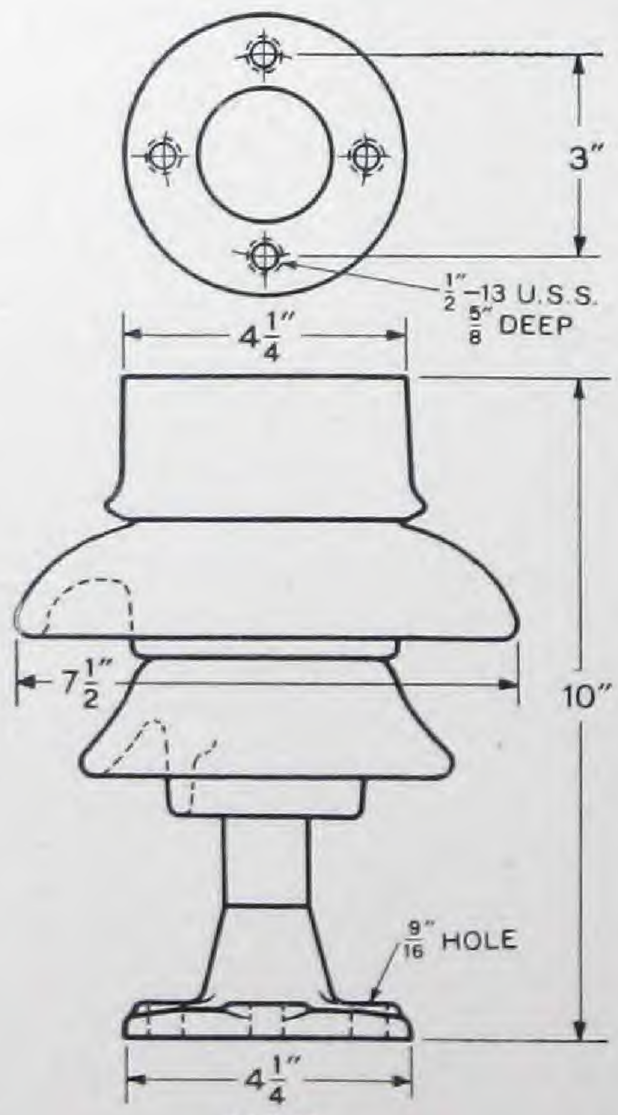
*Conforms to NEMA requirements.



31300



28193



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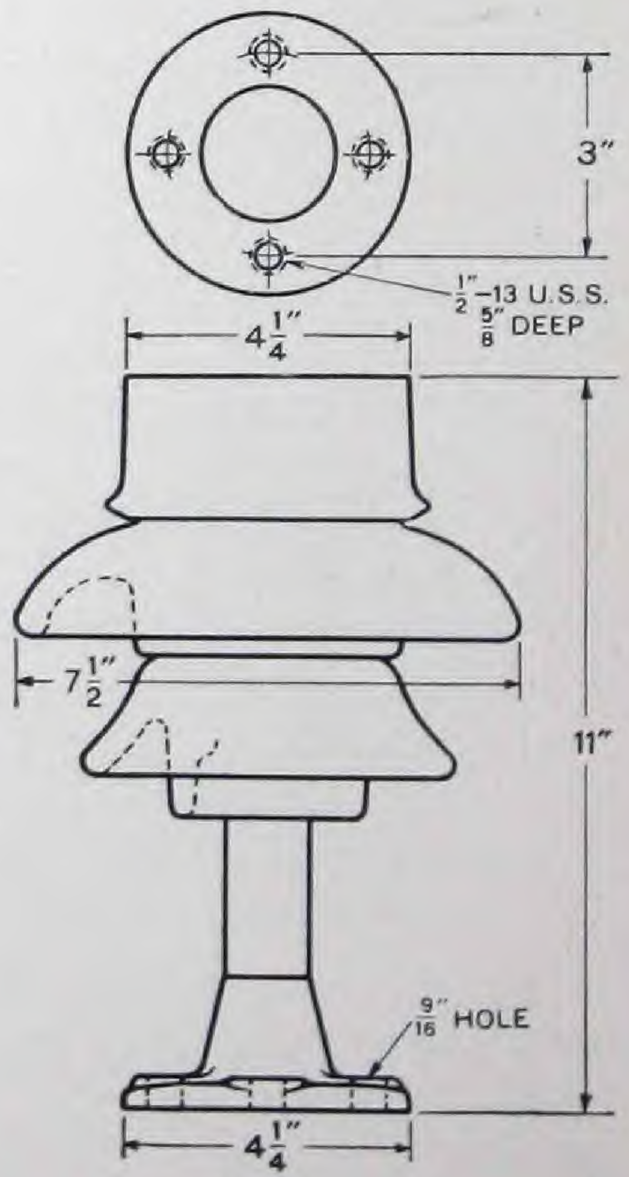


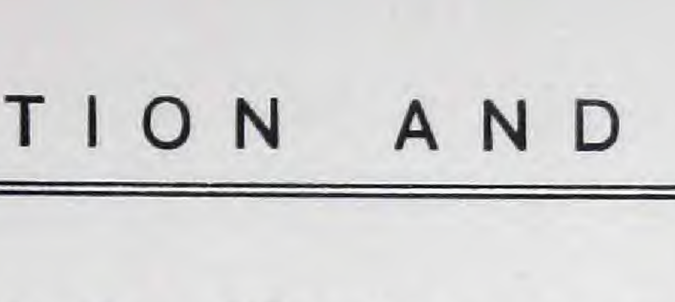
27317

Porcelain Entrance Bushings

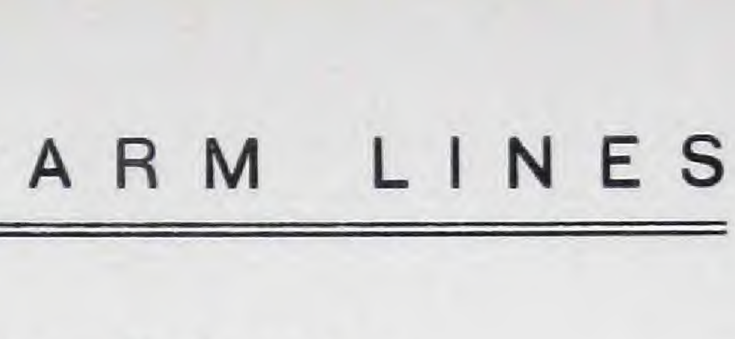
These bushings are especially adapted for primary meter house outlets and other comparable uses. They may be furnished in special lengths on either or both ends.

Cat. No.	Code Word	Net Wt., Lb.	Pkd. Wt., Each, Lb. Quan. 3	Quan. 10
32998	adugx	2	4.5	3
29651	aduiz	3.4	5.8	5
32999	adulb	4.5	8.75	8
13225	aduhy	2	4.5	3
26307	aduka	3.4	5.8	5
28734	adumc	4.5	8.75	8

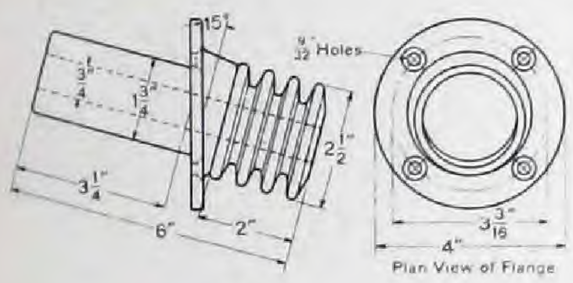
32998



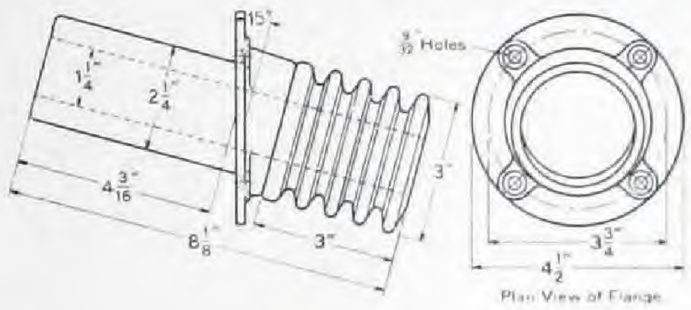
29651



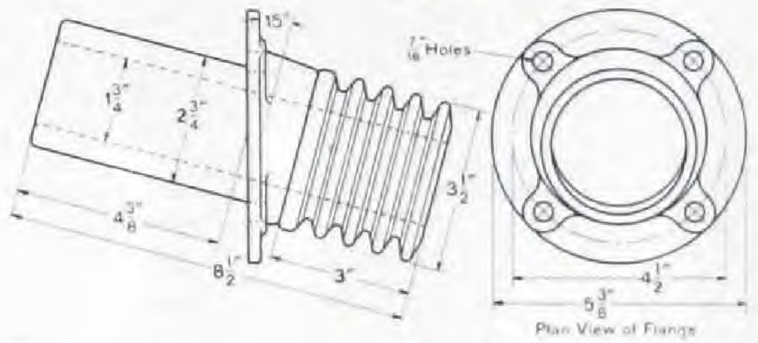
32999



13225



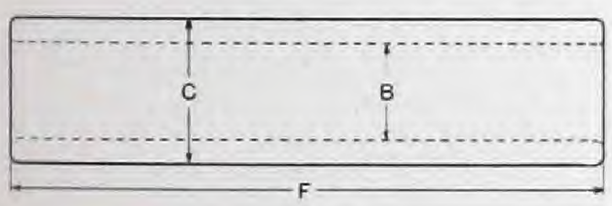
26307



28734

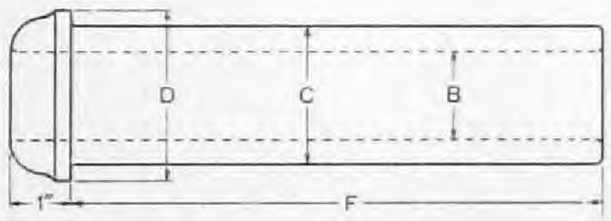
Porcelain Tubes

O-B porcelain tubes are offered in six standard styles for indoor wall or floor entrance work, but tubes of practically any desired size will be manufactured on order.



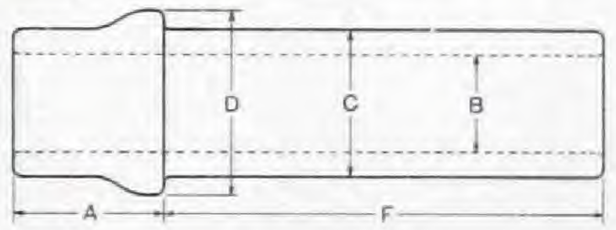
Style TA

Cat. No.	Code Word	Dim., Inches B	C	F
33340	aduzp	1	2	
33341	advap	1½	2½	
33342	advet	2	3	To
33343	advfu	2½	3½	be
33344	adviy	3	4½	spec-
33345	advla	3½	5	ified
33346	advod	4	5½	
33347	advpe	4½	6½	



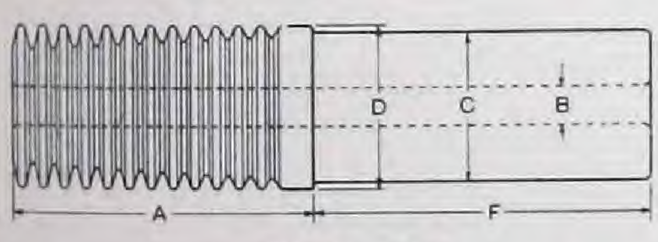
Style TB

Cat. No.	Code Word	Dim., Inches B	C	D	F
33324	advti	1	2	2¾	
33325	advuj	1½	2½	3¼	
33326	advyn	2	3	3¾	To
33327	advzo	2½	3½	4¼	be
33328	adwao	3	4½	5¼	spec-
33329	adwes	3½	5	5¾	ified
33330	adwix	4	5½	6¼	
33331	adwjy	4½	6½	7¼	



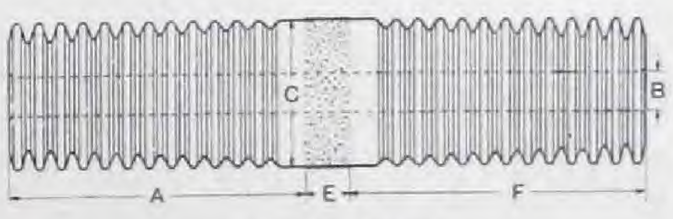
Style TC

Cat. No.	Code Word	A,F	Dim., Inches B	C	D
33316	adwma		1	2	2¾
33317	adwoc		1½	2½	3¼
33318	adwqe	To	2	3	3¾
33319	adwui	be	2½	3½	4¼
33320	adxbo	spec-	3	4½	5¼
33321	adxgu	fied	3½	5	5¾
33322	adxiw		4	5½	6¼
33323	adxky		4½	6½	7¼



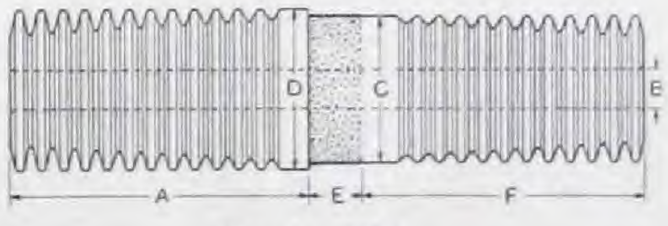
Style TD

Cat. No.	Code Word	A,F	Dim., Inches B	C	D
33300	adxna		1	2½	3
33301	adxre		1½	3	3½
33302	adxuh	To	2	3½	4
33303	adxvi	be	2½	4	4½
33304	adxyl	spec-	3	4¾	5¼
33305	adyam	ified	3½	5¼	5¾
33306	adyco		4	5¾	6¼
33307	adyer		4½	6½	7



Style TE

Cat. No.	Code Word	A,E,F	Dim., Inches B	C
33332	adyfs		1	2½
33333	adyhu		1½	3
33334	adyiv	To	2	3½
33335	adykx	be	2½	4
33336	adyly	spec-	3	4¾
33337	adyoa	ified	3½	5¼
33338	adyrd		4	5¾
33339	adyse		4½	6½



Style TF

Cat. No.	Code Word	A,E,F	Dim., Inches B	C	D
33308	adyug		1	2½	3
33309	adyvh		1½	3	3½
33310	adywi	To	2	3½	4
33311	adyyk	be	2½	4	4½
33312	adyzl	spec-	3	4¾	5¼
33313	adzal	ified	3½	5¼	5¾
33314	adzdo		4	5¾	6¼
33315	adzep		4½	6½	7

Conductor Tables

Aluminum Cable, Steel-Reinforced Bare

A.C.S.R. Aluminum Area A.W.G.	Sq. In.	Copper Equiv. A.W.G.	Number and Diam. of Strands, Inches Alum.	Steel	Diameter, Inches Compl. Cable	Steel Core	(Over) Armor Rods	Ultimate Strength, Lb.	Weight, Lb. per 1000 Ft.
4/0	.1662	2/0	6x.1878	1x.1878	.563	.1878	1.051	8435	293.4
3/0	.1318	1/0	6x.1672	1x.1672	.502	.1672	.938	6660	232.4
2/0	.1045	1	6x.1490	1x.1490	.447	.1490	.835	5300	184.5
1/0	.0829	2	6x.1327	1x.1327	.398	.1327	.744	4200	146.4
1	.0657	3	6x.1182	1x.1182	.355	.1182	.657	3340	116.1
2	.0521	4	7x.0974	1x.1299	.325	.1299	.595	3535	107.2
3	.0413	5	6x.0937	1x.0937	.281	.0937	.521	2100	73.0
4	.0324	6	7x.0772	1x.1029	.257	.1029	.555	2288	67.4
5	.0260	7	6x.0743	1x.0743	.223	.0743	.491	1315	45.8
6	.0206	8	6x.0661	1x.0661	.198	.0661	.434	1045	36.4
7	.0163	9	6x.0589	1x.0589	.177	.0589	.391	820	28.8
8	.0130	10	6x.0525	1x.0525	.158	.0525	.348	660	22.9

Copperweld-Copper

Conductor Number	Copper Equiv. A.W.G.	Number and Diam. of Strands, Inches Copper	Copperweld	Diameter Cable, Inches	Breaking Load, Lb.	Weight, Lb. per 1000 Ft.	Cross Section, Sq. In.
2A	2	2x.1699	1x.1699	.366	5876	256.8	.06799
3A	3	2x.1513	1x.1513	.326	4810	203.6	.05392
4A	4	2x.1347	1x.1347	.290	3938	161.5	.04276
5A	5	2x.1200	1x.1200	.258	3193	128.1	.03391
6A	6	2x.1068	1x.1068	.230	2585	101.6	.02689
7A	7	2x.0895	1x.1266	.223	2754	93.7	.02516
8A	8	2x.0797	1x.1127	.199	2233	74.3	.01995

Solid Copper Wire—Bare and Insulated

Size A.W.G.	Section Area Circ. Mils	Square Inches	Diam. Overall, Inches Bare	Weatherproof (Minimum)	Weight, Lb. per 1000 Ft. Bare	T.B.W.	Breaking Strength, Lb., Bare Wire Hard Drawn	Annealed
2	66370	.05213	.2576	.3826	201	260	3003	1670
3	52640	.04134	.2294	.3544	159	199	2439	1325
4	41740	.03278	.2043	.3293	126	164	1970	1050
5	33100	.02600	.1819	.3069	100	135	1591	880
6	26250	.02062	.1620	.2870	79	112	1280	700
7	20870	.01635	.1443	.2693	63	.....	1030	550
8	16510	.01297	.1285	.2535	50	75	826	440

Stranded Copper Cable—Bare and Insulated

Size A.W.G.	Section Area Circ. Mils	Square Inches	No. of Wires in Strand	Diam. Overall, Inches Bare	Weatherproof (Minimum)	Weight, Lb. per 1000 Ft. Bare	T.B.W.	Breaking Strength, Lb., Bare Wire Hard Drawn	Soft (Min.)
0000	211600	.1662	19 or 7*	.528	.684	653	800	9617	4637
000	167800	.1318	19 or 7*	.470	.626	518	653	7366	3677
00	133100	.1045	7	.414	.570	411	522	5926	2916
0	105500	.08289	7	.368	.524	326	424	4752	2312
1	83690	.06573	7	.328	.484	258	328	3804	1834
2	66370	.05213	7	.292	.417	205	270	3045	1525
3	52640	.04134	7	.260	.385	163	206	2433	1209
4	41740	.03278	7	.232	.357	129	170	1938	959
5	33100	.02600	7	.206	.331	102	140	1542	761
6	26250	.02062	7	.184	.309	81	115	1228	603

*Usually made of 7 strands when bare and 19 strands when insulated.

Galvanized Steel Strand

Approx. Diam., Inches	Cross Section, Sq. In.	Wires Number	Diam. Mils	Approx. Breaking Strength, Lb. Ordinary	Siemens-Martin	High Strength	Extra High Strength	Approx. Wt., Lb. per 1000 Ft.
1/2	.1496	7	165	7,400	12,100	18,800	26,900	517
7/16	.1204	7	148	5,700	9,350	14,500	20.800	399
3/8	.0987	7	134	4,250	6,950	10,800	15,400	296
5/16	.0653	7	109	3,200	5,350	8,000	11,200	205
1/4	.0379	7	83	1,900	3,150	4,750	6,650	121

Strengths and Dimensions of Poles

Strengths of Western Red Cedar and Creosoted Southern Pine Poles are the same for poles of the same class. Strengths are based on an ultimate fiber stress of 5600 lbs. per sq. in. for Western Red Cedar and 7400 lbs. per sq. in. for Southern Pine. Breaking loads for various classes of poles, assuming the entire load is applied 2 ft. from the top of the pole, are as follows:

Class	1	2	3	4	5	6	7
Breaking Loads, Lbs.	4500	3700	3000	2400	1900	1500	1200

A.S.A. Standard dimensions are given in the tables below:

Dimensions of Western Red Cedar Poles

Class	1	2	3	4	5	6	7	8	9	10
Min. Top Circ., In.	27	25	23	21	19	17	15	18	15	12
Length of Pole, Ft.	Minimum Circumference at 6 Ft. from Butt, Inches									
16					23.0	21.5	19.5			
18			28.5	26.5	24.5	22.5	21.0			
20	34.5	32.0	30.0	28.0	25.5	23.5	22.0			
22	36.0	33.5	31.5	29.0	27.0	25.0	23.0	No Butt Requirement	No Butt Requirement	No Butt Requirement
25	38.0	35.5	33.0	30.5	28.5	26.0	24.5			
30	41.0	38.5	35.5	33.0	30.5	28.5	26.5			
35	43.5	41.0	38.0	35.5	32.5	30.5	28.0			
40	46.0	43.5	40.5	37.5	34.5	32.0				
45	48.5	45.5	42.5	39.5	36.5					
50	50.5	47.5	44.5	41.0	38.0					
55	52.5	49.5	46.0	42.5	39.5					
60	54.5	51.0	47.5	44.0						
65	56.0	52.5	49.0	45.5						

Dimensions of Creosoted Southern Pine Poles

Class	1	2	3	4	5	6	7	8	9	10
Min. Top Circ., In.	27	25	23	21	19	17	15	18	15	12
Length of Pole, Ft.	Minimum Circumference at 6 Ft. from Butt, Inches									
16					21.5	19.5	18.0			
18			26.5	24.5	22.5	21.0	19.0			
20	31.5	29.5	27.5	25.5	23.5	22.0	20.0			
22	33.0	31.0	29.0	26.5	24.5	23.0	21.0	No Butt Requirement	No Butt Requirement	No Butt Requirement
25	34.5	32.5	30.0	28.0	26.0	24.0	22.0			
30	37.5	35.0	32.5	30.0	28.0	26.0	24.0			
35	40.0	37.5	35.0	32.0	30.0	27.5	25.5			
40	42.0	39.5	37.0	34.0	31.5	29.0	27.0			
45	44.0	41.5	38.5	36.0	33.0	30.5	28.5			
50	46.0	43.0	40.0	37.5	34.5	32.0	29.5			
55	47.5	44.5	41.5	39.0	36.0	33.5				
60	49.5	46.0	43.0	40.0	37.0	34.5				
65	51.0	47.5	44.5	41.5	38.5					

Farm Line Conductor Stringing Charts

Following are charts which cover stringing sags for several types of conductors used on farm lines. They apply to lines having relatively long spans and therefore are based on fairly long ruling spans. The curves indicate initial or stringing sags at which the conductor should be strung under the conditions specified. After the conductor has been loaded and has stretched, sags will be greater than those on the curves. The final or operating conditions of the conductor may be obtained from design or final sag and tension charts. Where clearance below conductors is limited, these factors should be considered; otherwise after the conductor has been loaded with ice, clearance may not be sufficient.

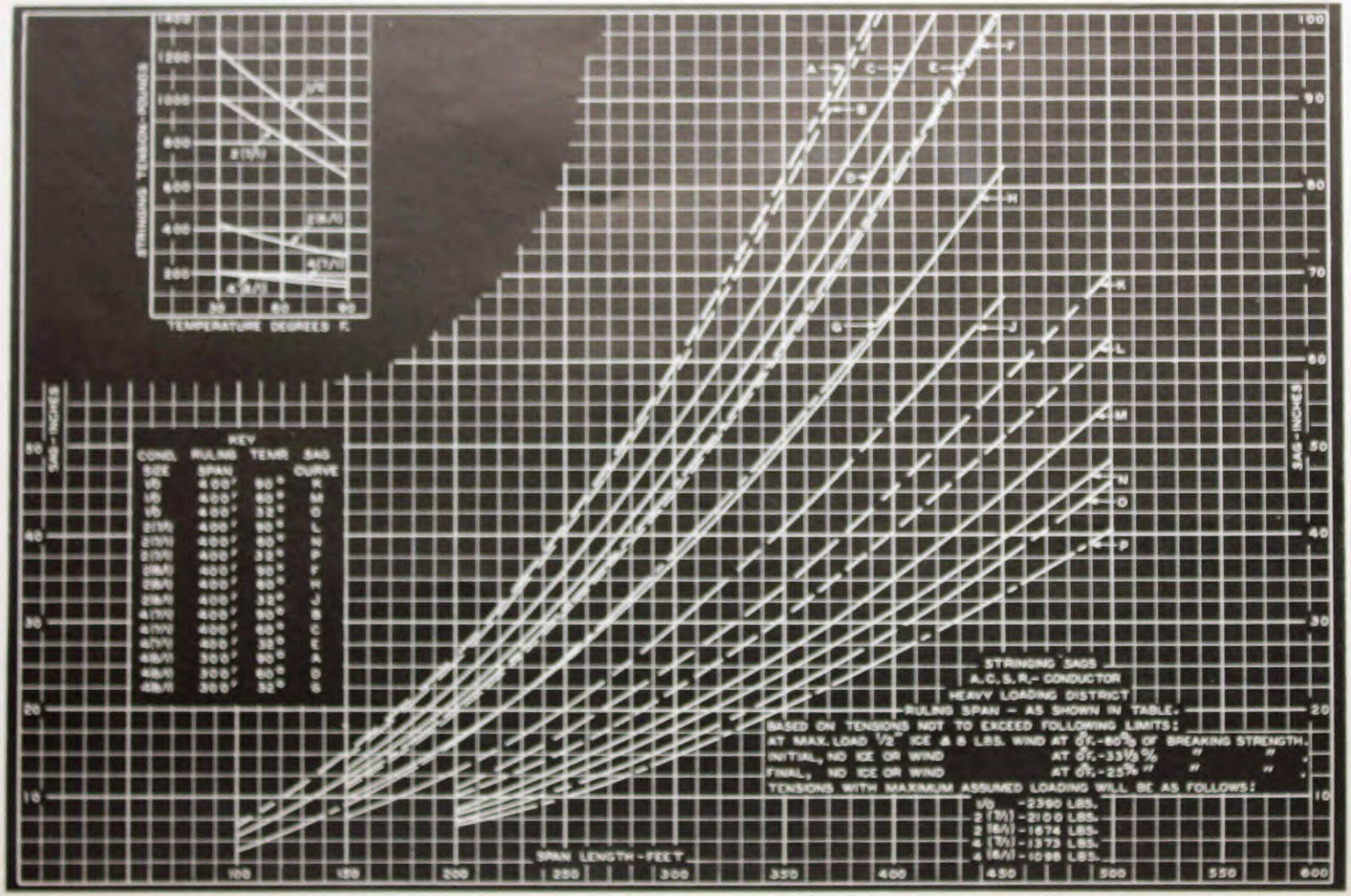
Stringing sags for each size of conductor are based on a definite ruling span. The ruling span is a theoretical span calculated by taking the average span between dead-ended points and adding to this two-thirds of the difference between this average span and the longest span in this undead-ended section. The accompanying table gives the ruling spans on which the stringing charts are based and also a range of ruling span, which indicates maximum and minimum ruling spans over which the charts may safely be used. These charts are all based on maximum or normal tension limitations which are expressed on the charts in percent of rated conductor strength.

Safe Range of Ruling Spans

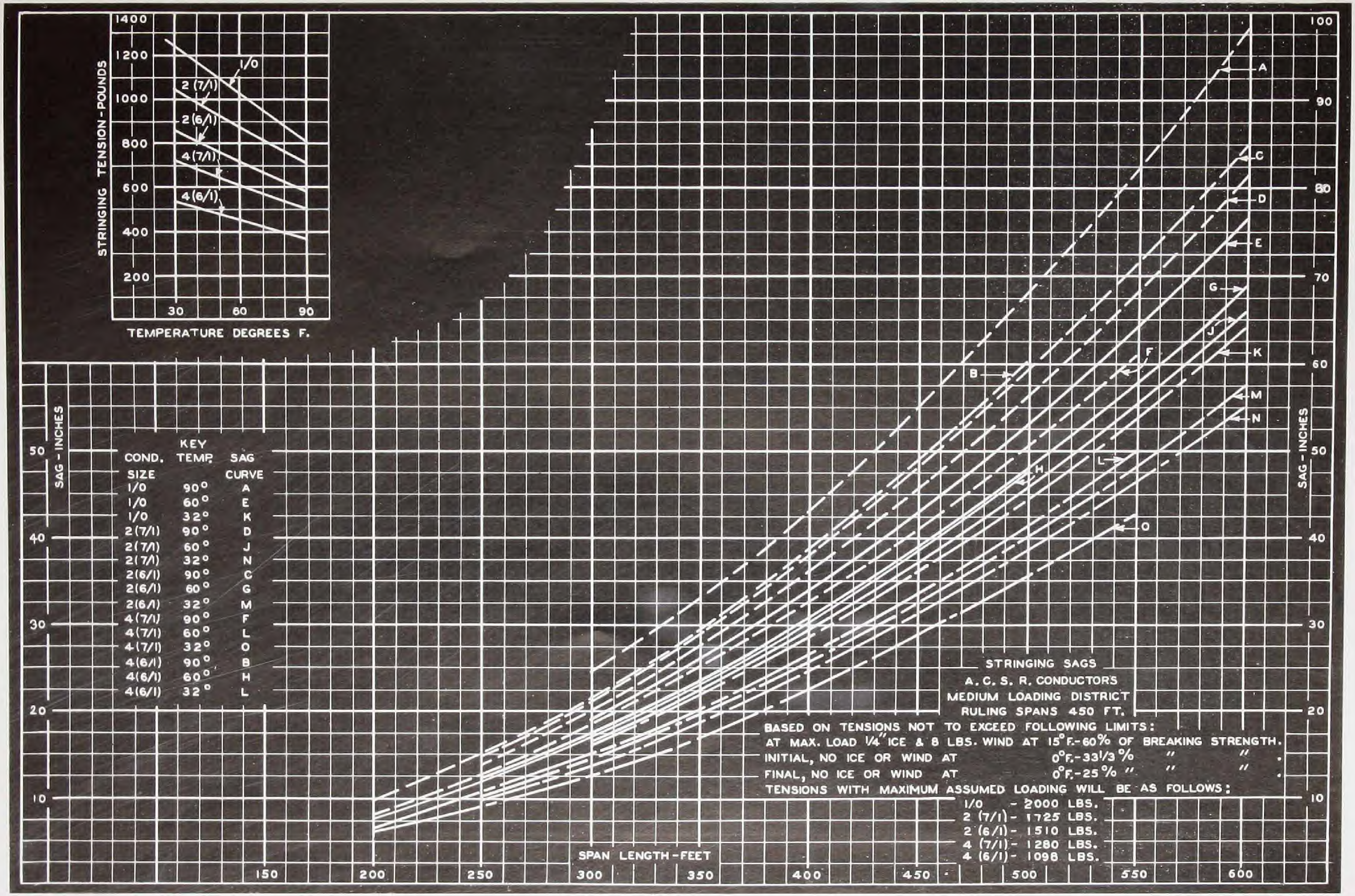
Conductor	Loading	Ruling Span, Ft.	Range of Ruling Spans, Ft.
4(6/1) ACSR	Heavy	300	150 to 300
4(7/1) ACSR	Heavy	400	275 to 400
2(6/1) ACSR	Heavy	400	250 to 400
2(7/1) ACSR	Heavy	400	200 to 410
1/0(6/1) ACSR	Heavy	400	275 to 475
4(6/1) ACSR	Medium	450	275 to 450
4(7/1) ACSR	Medium	450	350 to 530
2(6/1) ACSR	Medium	450	400 to 600
2(7/1) ACSR	Medium	450	425 to 600
1/0(6/1) ACSR	Medium	450	425 to 600
8-A CWC	Heavy	400	300 to 425
6-A CWC	Heavy	400	275 to 400
4-A CWC	Heavy	400	285 to 460
2-A CWC	Heavy	400	350 to 500
8-A CWC	Medium	450	400 to 575
6-A CWC	Medium	450	390 to 600
4-A CWC	Medium	450	400 to 600
2-A CWC	Medium	450	400 to 600
6 Copper	Heavy	250	200 to 250
4 Copper	Heavy	300	250 to 300
2 Copper	Heavy	325	275 to 325
6 Copper	Medium	350	300 to 350
4 Copper	Medium	400	250 to 400
2 Copper	Medium	400	250 to 405

ACSR—Aluminum Cable, Steel-Reinforced
CWC—Copperweld-Copper

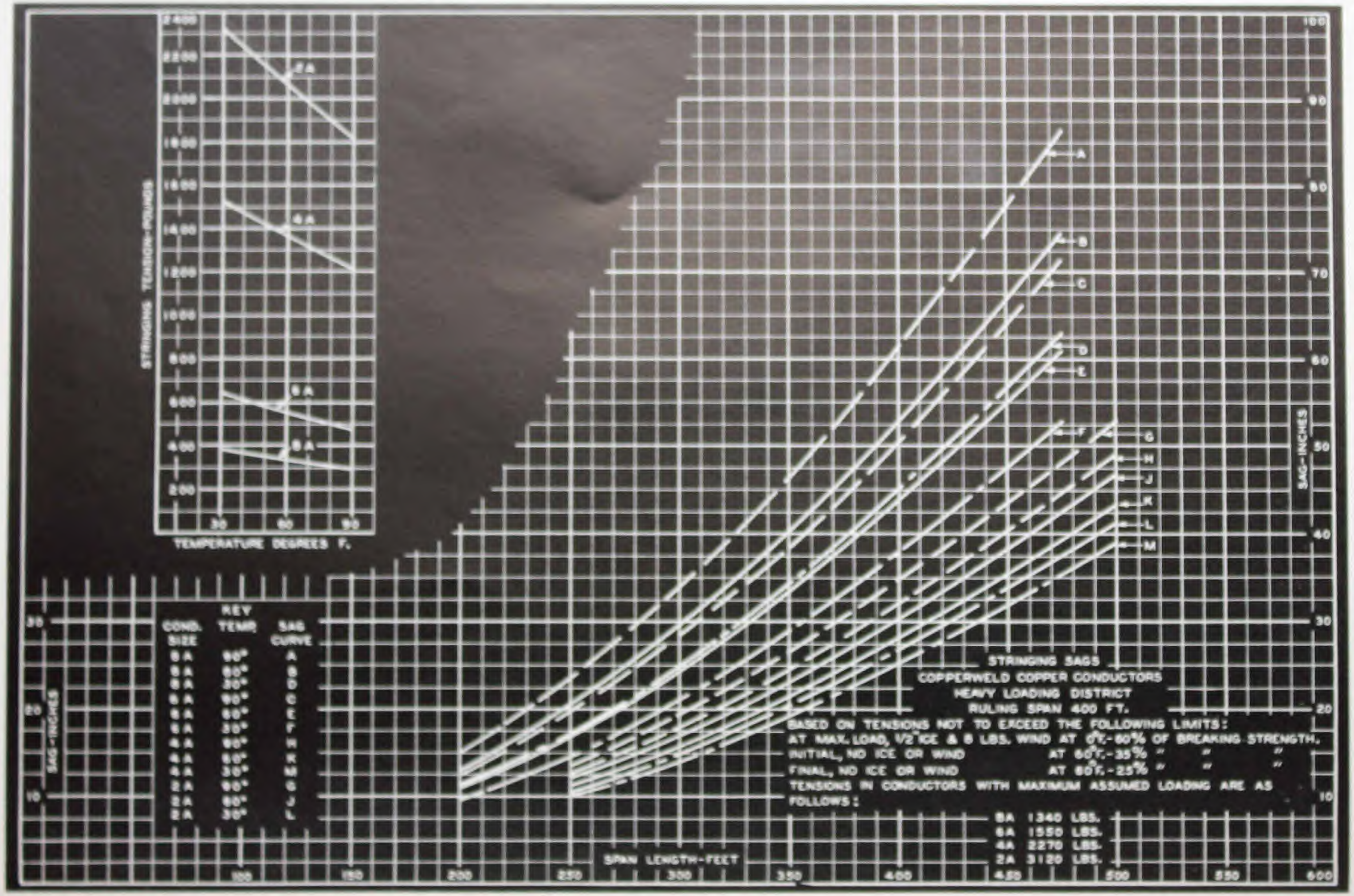
Stringing Chart for A.C.S.R. Conductors—Heavy Loading



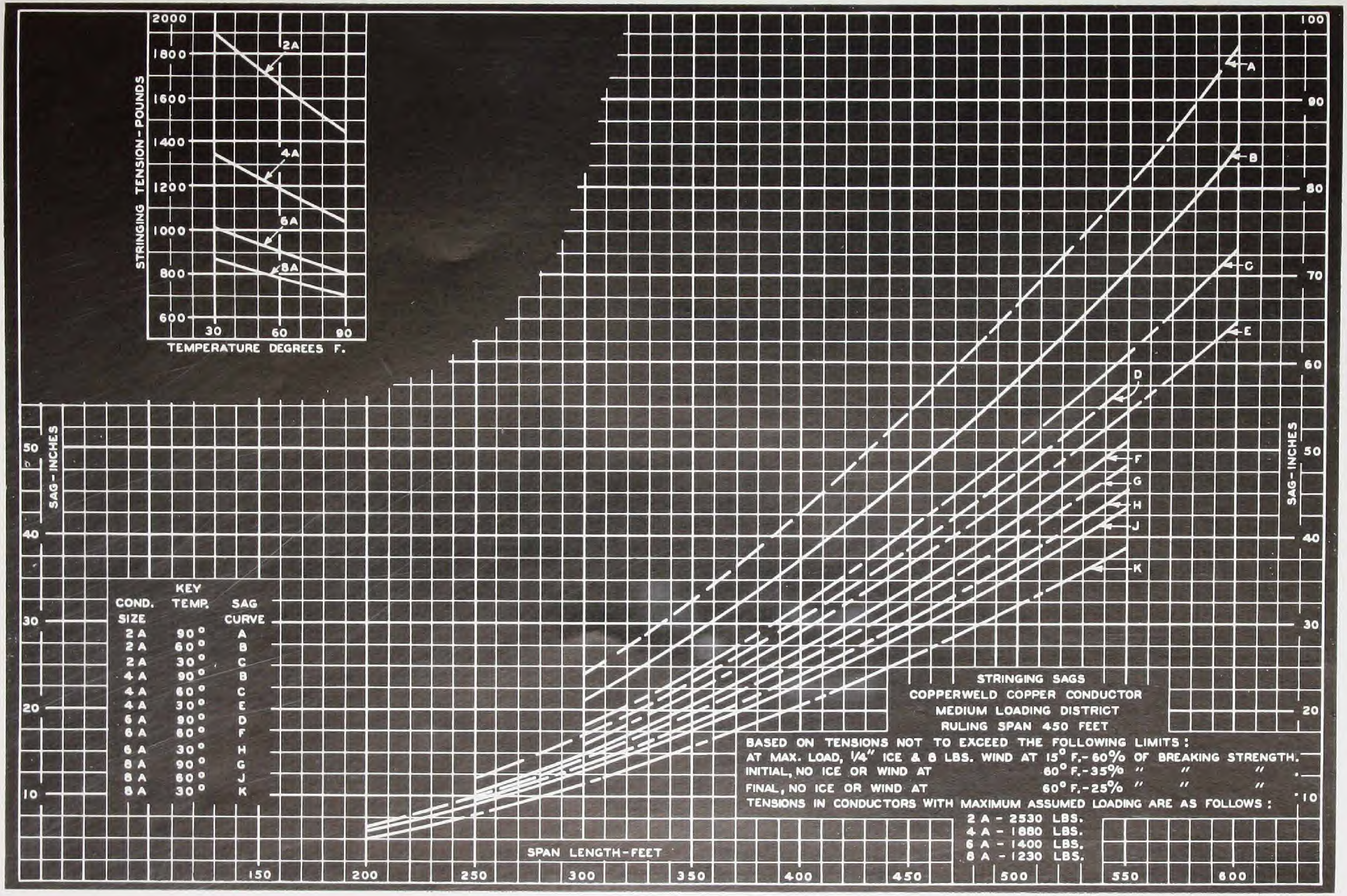
Stringing Chart for A.C.S.R. Conductors—Medium Loading



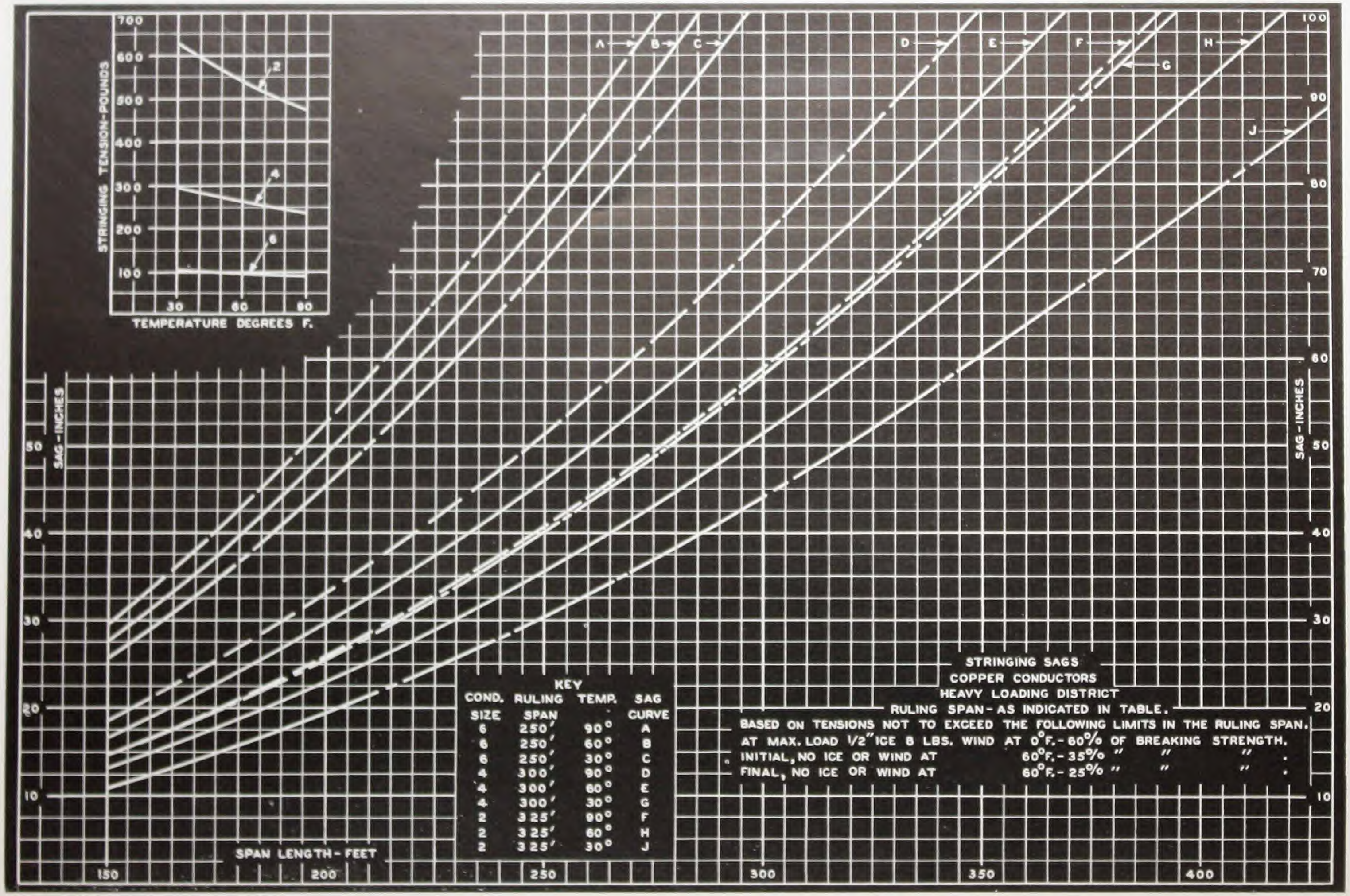
Stringing Chart for Copperweld Copper—Heavy Loading



Stringing Chart for Copperweld Copper—Medium Loading



Stringing Chart for Copper Conductors—Heavy Loading

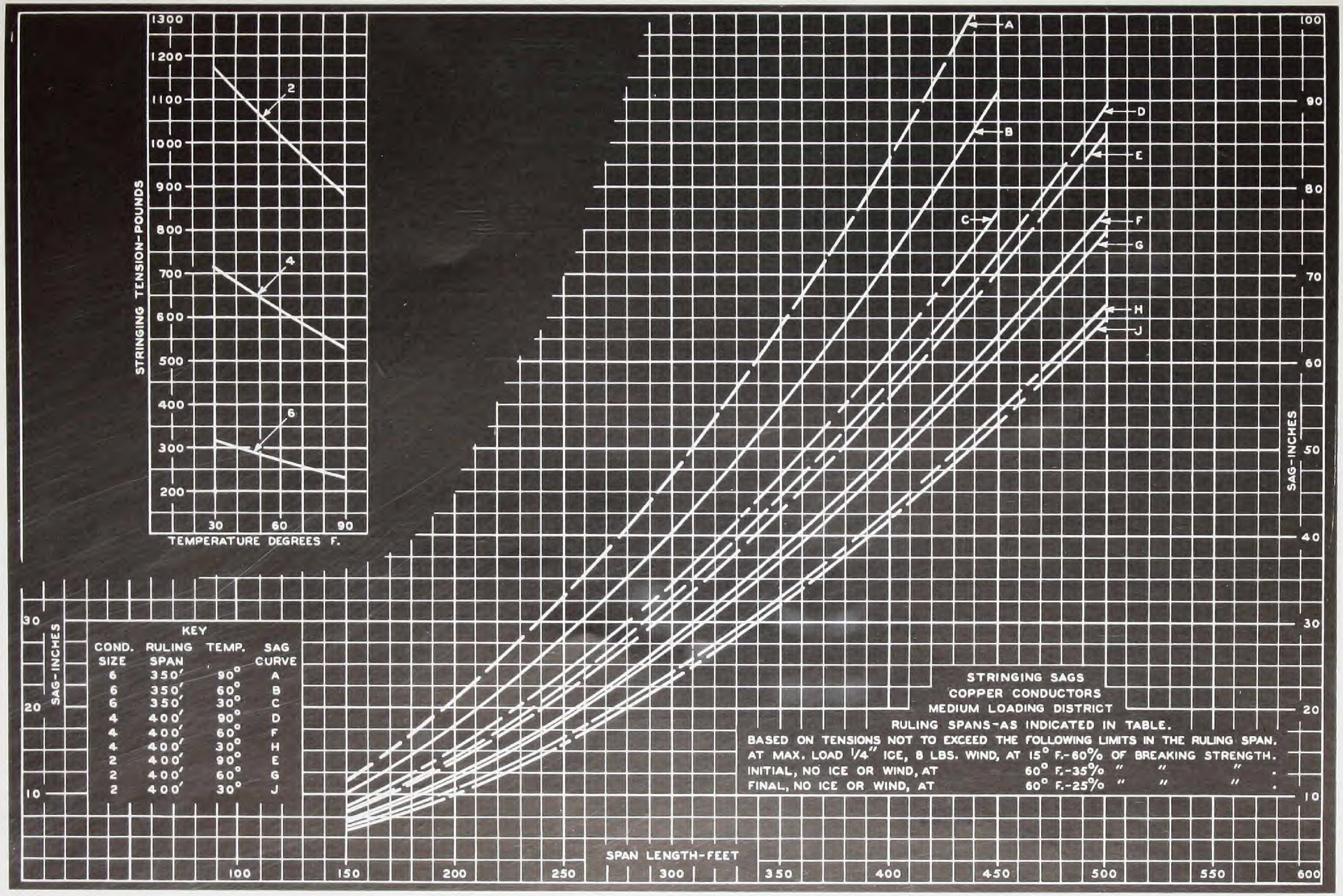


KEY			
COND. SIZE	RULING SPAN	TEMP.	SAG CURVE
6	250′	90°	A
6	250′	60°	B
6	250′	30°	C
4	300′	90°	D
4	300′	60°	E
4	300′	30°	G
2	325′	90°	F
2	325′	60°	H
2	325′	30°	J

STRINGING SAGS
COPPER CONDUCTORS
HEAVY LOADING DISTRICT
RULING SPAN - AS INDICATED IN TABLE.

BASED ON TENSIONS NOT TO EXCEED THE FOLLOWING LIMITS IN THE RULING SPAN.
AT MAX. LOAD 1/2" ICE 8 LBS. WIND AT 0°F. - 60% OF BREAKING STRENGTH.
INITIAL, NO ICE OR WIND AT 60°F. - 35% " " " .
FINAL, NO ICE OR WIND AT 60°F. - 25% " " " .

Stringing Chart for Copper Conductors—Medium Loading



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